REPORT RESUMES

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CAREER DECISIONS AND EDUCATIONAL PLANS DURING COLLEGE.

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A NATIONAL SURVEY WAS CONDUCTED TO DETERMINE THE NUMBER OF BACHELOR'S DEGREE RECIPIENTS (JUNE 1961) IN AMERICAN COLLEGES AND UNIVERSITIES WHO WERE PLANNING TO ENTER POSTGRADUATE STUDY IN PREPARATION FOR SUCH PROFESSIONS AS MEDICINE, SCIENCE, ENGINEERING, AND TEACHING. THE SURVEY SOUGHT TO--(1) IDENTIFY FACTORS WHICH INFLUENCE CHOICES OF FIELD, (2) DETERMINE AT WHAT POINT IN TIME CAREER DECISIONS ARE MADE, (3) DISCOVER THE INFLUENCE OF PROSPECTIVE FINANCIAL SUPPORT, (4) ASCERTAIN WHICH CAREERS COMPETE WITH EACH OTHER, AND (5) EXAMINE SUCH INFLUENCES ON CAREER DECISIONS AS MARITAL STATUS AND CONTACT WITH UNDERGRADUATE INSTRUCTORS. A SAMPLE OF APPROXIMATELY 34,000 GRADUATES WAS ASKED TO RESPOND TO A SELF-ADMINISTERED, 19-PAGE QUESTIONNAIRE. THE TABULATED RESULTS SHOWED (1) SHIFTS IN CAREER PREFERENCE DURING COLLEGE AND THE VARIABLES WHICH INDICATED PREDICTIVE VALIDITY FOR OCCUPATIONAL DECISIONS, (2) FACTORS WHICH ARE ASSOCIATED WITH CHOOSING A FIELD, (3) THE PATTERN OF ANTICIPATIONS FOR GRADUATE STUDY, (4) THE EFFECTS OF PERSONAL AND SOCIAL FACTORS ON THE EXPECTATIONS FOR GRADUATE STUDY BY STUDENTS IN THE SAME CAREER LINES, AND (5) NUMBERS OF STUDENTS PLANNING ADVANCED STUDY, AND THEIR PERSONAL AND SOCIAL CHARACTERISTICS. (AW)

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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GREAT ASPIRATIONS: VOLUME I

Career Decisions and Educational Plans During College

by

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CHAPTER I

INTRODUCTION

This research concerns the career preferences and postgraduate training plans of June, 1961, bachelor's degree recipients in American colleges and universities.

Few topics are of greater importance to this nation today. Scanning the issues and slogans of the day...."satelites," "teacher shortage," "population explosion," "high speed computers," "cancer research," "economic growth," "the two cultures," "automation," "Federal aid to education," "Why Johnny can't (or can) read," "costs of medical care," "equality of opportunity," ......a moment's reflection on each leads directly to unanswered questions about the selection, allocation, and training of professional specialists needed to grapple with these problems or whose short supply constitutes a severe problem in itself.

This generalized concern about the supply and demand for highly trained man and woman power can be translated into a number of specific questions about bachelor's degree recipients.

1) How many graduating seniors expect to enter various critical professions?
2) How do various occupations fare in competing for the top academic talent among the college graduates?
3) What personal and social factors are associated with entry into particular occupations?
4) How have students' career preferences changed over four years of college?
5) How many graduating seniors expect to go on for postgraduate training?
6) How many of the top group in academic performance are lost to postgraduate training?
7) What factors facilitate or impede plans for postgraduate study?
8) What are the personal and social characteristics of students planning postgraduate study in particular fields?

The Study

In order to seek answers to these and other questions about graduating seniors, in early 1961 three government agencies, the Cooperative Research Program of the U. S. Office of Education, the National Institutes of Health, and the National Science Foundation, joined to provide funds for a large scale national survey[1] to be administered through the Cooperative Research Program. Drs. Herbert H. Rosenberg of the National Institutes of Health, Robert Cain of the National Science Foundation, Alice Scates and Herbert Conrad, both of the Office of Education, together constituted a vigorous and effective sponsoring committee which succeeded in the complicated task of administering the grant and providing important guidance and advice to the research group.

The research itself was conducted by the National Opinion Research Center, a non-profit social research institute affiliated with the University of Chicago. At various times and in various capacities more than 100 persons participated in the survey at NORC, and space limits us to naming only those staff members who played key roles. Peter H. Rossi, Director of NORC, served as principal investigator for the project and provided over-all administrative and policy direction. Jacob J. Feldman, Director of Research at NORC, designed the sample and served as technical consultant throughout the study. Richard McKinlay, Assistant Study Director, supervised the extremely difficult process of machine editing and tabulation of the large number of questionnaires. Mrs. Ruth Boorstin served as Field Director for data gathering operations in 135 schools. Norman Bradburn, Study Director, contributed heavily to the preliminary stages of the analyses, particularly in the construction of measures of academic performance. Joe Zelan, Assistant Study Director, was responsible for preparation of the final tables. Harold Levy, Machine Room Superintendent, and Sanford Abrams, Assistant Machine Room Superintendent, directed the formidable task of IBM processing. Of the many student assistants involved in the survey, Judy Schick, Dorothy Pownall, and George Hesslink contributed especially important efforts. Mrs. Nella Siefert again displayed her unique craftsmanship in the typing of endless text and complex statistical tables, with the able assistance of Mrs. Joanne Hesslink. And the superb performance of Elroy Parker, who multilithed and supervised the assembling of this huge report should not be forgotten.

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[1] The National Institutes of Health had supported an exploratory phase of the research during the 1960 calendar year.

Outside of NORC, we wish to acknowledge a special indebtedness to the National Merit Scholarship Corporation and, in particular, to John Holland, Alexander Astin, and Robert Nichols, who provided us with ideas, encouragement, and important sets of data.

James A. Davis, Study Director, is responsible for the analysis and text of this particular report.

The Sample

Data for this report are based on self-administered questionnaires (a copy of which is appended to this report) completed in the Spring of 1961 by 33,982 June graduates sampled from 135 colleges and universities. The sample was designed to be representative of June, 1961 graduates receiving degrees from accredited and the very largest non-accredited bachelor's degree granting institutions.

A detailed analysis of the sample and a list of the sample institutions appear in Appendices IV and V. For introductory purposes, however, we may note that: (a) All of the 135 sampled schools agreed to cooperate with the study, (b) Approximately 85 per cent of the eligible students completed a questionnaire, (c) The large size of the sample makes sampling error very small for figures based on the total number of cases.

Four qualifications and restrictions must be noted:

a) Because the sample was designed to be representative of students, not institutions, the 135 schools are not a random sample of American colleges and universities, larger institutions being greatly overrepresented.

b) Approximately one-fourth of college graduates in recent years finished their undergraduate work at a time other than the Spring term. To the unknown extent that they differ from June graduates, the sample is not representative of 1961 graduates as a whole.

c) Because many students enter graduate school after a period of a year or more out of college, and some enter professional schools after less than four years of college, the sample is not designed to be representative of students entering graduate training in Fall, 1961, although students from our universe constitute a high proportion of those entrants.

d) At many points in the analysis, it is important to remember that the sample was not designed to be representative of college students in general. Roughly speaking, 60 per cent of college freshmen survive to graduation, and it is these "survivors" who constitute the population sampled.

The Questionnaire

Each student in the sample was asked to complete the same 19-page self-administered questionnaire (reproduced in Appendix VI). Because of the unusually large sample size and the limitations of time and budget, the questionnaire was designed to meet the following restrictions:

a) Except for the student's name, the entire questionnaire was "pre-coded," i.e., the respondent answered by circling the IBM code number of a particular alternative, rather than answering in his own words.

Department of
HEALTH, EDUCATION, AND WELFARE
Office of Education
Washington 25, D. C.

Project Description

Career Plans and Aspirations of 1961 College Graduates

Problem.--This study is designed to provide national estimates of how many graduating seniors are planning to enter advanced study preparing for careers in medicine, biological sciences, engineering, college and university teaching, and the like.

Major objectives.--The objectives are (1) to provide information on factors which influence the choice to go on to advanced training in these fields; and (2) to determine at what points in time such decisions are made; (3) to discover the influence of the prospects of financial support, such as scholarships and assistantships; (4) to ascertain which career lines are competing with each other; and (5) to examine such influences on career decisions as marital status, contact with undergraduate instructors and the like.

Procedures.--A probability sample of 40,000 June 1961 graduates will be selected from 130 undergraduate colleges and universities, with an over-representation of those schools that send a large proportion of their graduating classes to advanced study. The sample size of 40,000 is necessary to obtain a large enough group (estimated at 8,000) who will go on to advanced study to support an analysis of subgroups that are very small in number. Within each of the 130 undergraduate schools the June 1961 graduates in schools of liberal arts, science, engineering, education and possibly other groups will be systematically sampled with sampling ratios based on the size of the senior class. These seniors will be asked to respong to a short questionnaire which will provide information on (1) career plans and expectations, (2) academic achievement, (3) personal and social characteristics, (4) their perceptions of institutional characteristics, and (5) their occupational images and information. If deemed desirable, special groups of students may be identified through the use of the questionnaire and interviewed personally in greater depth. The main variables would be tabulated by school and type of advanced training desired.

Peter Rossi, Director,
National Opinion Research Center,
University of Chicago,
Chicago, Illinois.

Project No. 1194.
Duration: 1 year, 2 months.
December 1960 to January 1962

b) The questionnaire was designed so that the same instrument was applicable to a variety of fields, schools, career plans, etc.

c) The questionnaire was designed so that no coding or editing took place prior to key punching. The completed cards, however, were subjected to extensive machine editing ("cleaning") to resolve discrepancies, detect erroneous punches, etc.

The following topics were covered in the questionnaire:

a) Intentions for postgraduate study.

b) For students planning postgraduate study in 1961... application and acceptance status, stipend applications and offers, and expected financial resources.

c) Intended career field and type of employer.

d) Occupational interests and values.

e) Undergraduate activities, residence, employment, etc.

f) Reactions to academic courses and faculty relationships.

g) Academic performance and honors.

h) Self-rated personality characteristics and social values.

i) Background information: sex, parental family characteristics, religion, marital status, residence, etc.

This Report

Because of the unusual size and strategic importance of this sample, this report is but the first of several to be produced by NORC from this project. In particular, monographs treating specific occupations in more detail than is possible here are being prepared for the fields of Medicine (by Jacob J. Feldman) and Law (by Seymour Warkov), and it is hoped that other specific occupations can be added to the list. In addition, Father Andrew Greeley, then a graduate student in Sociology at the University of Chicago, has completed a book length analysis of religious differences in the sample, which will be published in the near future by Sheed and Ward.

Even more important, since the completion of this report, NORC has received a grant from the National Institute of Mental Health to conduct follow-up studies of the sample during their initial years after graduation. In the Spring of 1962 the total sample received a questionnaire to determine whether their anticipated occupational and educational plans worked out in reality. Norman Miller, Senior Study Director, is responsible for the analysis of these materials. At this writing, the Spring, 1963, follow-up questionnaire is on its way to the total sample, and additional waves of questionnaires are anticipated in the next two years.

Since the data treated in this report were all collected in the weeks shortly before graduation, the materials have a special time perspective. Our concerns were mostly with the students' past and futures, and relatively less with their immediate situation. In terms of their past, we wanted to find out how four years of college experience had led them to the career and postgraduate training plans they envisioned at graduation, while in terms of the future, we were concerned with their anticipated choices of career field and plans for advanced study. While their true futures were unknown and their past decisions subject to the distortion of memory, our belief is that the materials catch these young people at a crucial point in their occupational and academic lives.

With this perspective in mind, the report is organized chronologically, beginning with the prior career decisions during college and ending with the plans for graduate study after graduation. The chapters are as follows:

Chapter II, A Senior Class Portrait...describes the June, 1961 sample as a totality, with particular attention to the variables found to be important for later chapters.

Chapter III, Correlates of Career Preference: Change and Stability During College....analyzes reported shifts in career preference during college and treats the variables predictive of various occupational decisions.

Chapter IV, Correlates of Career Preference: Nine Occupational Groups....re-analyzes the data from Chapter II around occupations rather than predictor variables, and provides summaries of the factors associated with choice of Natural Science, Social Sciences, Humanities, Law, Medicine, Engineering, Education, Business, and Other Professions.

Chapter V, Plans for Postgraduate Study: An Overview ....summarizes the broad pattern of anticipations for advanced study beyond the bachelor's degree.

Chapter VI, Who Plans to Go to Graduate School?.... treates the effects of personal, situational, and social factors in explaining why students in the same career lines vary in their expectations for graduate study.

Chapter VII, The Future Graduate Student....selects out from the total sample those students planning advanced study and describes the personal and social characteristics of students planning to enter a wide variety of specific fields of study.

CHAPTER II

A SENIOR CLASS PORTRAIT

Who are these graduates? Where did they come from? What did they think of college? Where are they going? What do they want out of life? How do they view themselves? These questions must have occurred to all kinds of people as they sat through graduation addresses in June of 1961. Everyone of course has some kind of impression of the type of graduate who is emerging from the 16-year educational system, but impressions have a way of being misleading or confusing. In this chapter we will attempt to present a profile of the June, 1961 class; our data is extensive though fragmentary since there are still many things about the class we would like to know but do not know. What we do know, however, confirms some popular impressions and casts doubt on certain other impressions.

The modal graduates of June, 1961 were more likely to be men than women, were in their early twenties, came from families where they were neither the youngest nor the oldest, nor the only child, were unmarried, and were white, native-born Americans, from cities of over 100,000. They were members of the middle and upper middle class whose fathers and mothers had at least graduated from high school, and whose income was over $7,500. Their fathers were managers or professionals, the graduates had at least a part-time job during their final year of college, and were still members of the Protestant religion in which they had been raised.

They had warm and positive feelings toward their schools and professors, planned to continue their education in graduate school (at least eventually), planned to be some kind of professional (if one counts education from elementary to university as a profession), did not particularly like businessmen, had at least a B average, thought of themselves as being in the top one-fourth of their class and found intellectual and service values the most important things they would look for in their job. While they were in school they had lived in a dormitory or in off-campus housing and were within four hours' driving time from their family.

They thought of themselves as conventional, religious, and politically liberal, and were inclined to describe themselves as cooperative, ambitious, happy, fun-loving, easy going, idealistic, athletic, and cautious.

Such, then, is a description of the "typical" June, 1961 graduate, but such a modal profile overlooks many interesting details in the portrait of the senior class. In this chapter we will begin with some simple descriptive items grouped under five headings--demography, social class, college experience, future plans and self-description--and then proceed to a more detailed analysis using various "background indices."

Demography

Table 2.1 summarizes the pertinent demographic information about the 1961 graduates.

Six out of ten graduates are male, four out of ten are female, [Table 2.1 a)] a fact with continual implications for understanding career decisions. In terms of age [2.1 b)] the students are very heavily concentrated in their early twenties. About two-thirds are twenty-one or twenty-two; five per cent are under twenty-one and thirty per cent are older than the more or less standard graduating age of twenty-two (18 per cent are over twenty-five). The clear suggestion is that part-time or postponed studies are far from rare in American higher education.

Despite the increase in youthful marriages and the anxieties about campus family formation, we can note from Table 2.1 c) that three-fourths of the graduates are still unmarried and that almost two-thirds plan to be single at least beyond the fall after their graduation. If a graduate is married, however, he (or she) is very likely to have children or to be expecting a child.

TABLE 2.1

SELECTED DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

(Representative Sub-sample)

a) Sex

	Per cent
Male	60
Female	40
	100%

N = 3,397

b) Age (at last birthday)

	Per cent	Cumulative
19 or younger	-	-
20	5	-
21	39	95
22	26	56
23-24	12	30
25-29	12	18
30 or older	6	6
Total	100%	

N	3,355
NA	42
Total N	3,397

c) Marital Status

	Per cent	
Single	75	
Expect to be married before Fall, 1961		13
Other		62
Married	24	
Child or expecting a child		16
No children		8
Ex-married	1	
Total	100%	

N	3,356
NA	41
Total N	3,397

d) Race

	Per cent
White	94
Negro	3
Oriental	2
Other	1
Total	100%

N	3,328
NA	69
Total N	3,397

e) Nativity

	Per cent	
U.S. born	97	
Foreign born	3	
Naturalized		2
Other, expect to stay in U.S.		1
Other, do not expect to stay		1
Total	100%	

N	3,327
NA	70
Total N	3,397

TABLE 2.1--Continued

f) Hometown During High School

	Per cent	
Central city	44	
More than 2 million		9
500,000 - 2 million		5
100,000 - 499,999		8
50,000 - 99,999		4
10,000 - 49,999		10
Less than 10,000		8
Suburb in a metropolitan area	35	
More than 2 million		10
500,000 - 2 million		9
100,000 - 499,999		8
Less than 100,000		9
Farm or open country	22	
Total	101%	

N	3,307
NA	90
Total N	3,397

Tables 2.1 d) and 2.1 e) show that the vast majority of graduates are white, native-born Americans. Even though the Negro population of the country is some 10 per cent of the total, only three per cent of the graduates are Negro. (Just as the social experiences of American Negroes are unique, the career plans and choices of the 1,778 Negro students were found to be distinctive and throughout this report we shall treat them as a special group.)

Although originally included as a routine demographic item, the size of "the community which you think of as your home town during high school days" turned out to be an important correlate of career decisions. The answer categories were framed to classify "hometowns" along two dimensions: a) whether the student had come from a central city, a suburb, or a rural area, and b) what size the city of origin was. Table 2.1 f) shows the distribution of the respondents: 44 per cent come from a central city, 35 per cent from a suburb, and 22 per cent from a farm or open country. (Because only eight per cent of the sample reported "farm" as the occupation of the head of their parental household, it appears that a substantial number of those from the last category ought to be classified as "rural, non-farm.") On the size of city dimension, half come from cities over 100,000 or their suburbs and about one-fifth are rural.

Social Class

Table 2.2 furnishes us with information on the socio-economic background of the June, '61 seniors.

By the socio-economic status of a family we mean its possession or lack of possession of those things or characteristics which are preferred in a given society. In modern America at least, the characteristics which contribute to one's status seem to be chiefly income, occupation, education, and religion. (The first three elements are highly intercorrelated while the last element is correlated with the first three to some extent and also with hometown size; in this study two indices are used to control the operation of these variables--a socio-economic status index and an index of background characteristics. Later

TABLE 2.2

SELECTED SOCIAL CLASS CHARACTERISTICS OF THE SAMPLE

(Representative Sub-sample)

a) Annual Income of Parental Family

	Per Cent	Cumulative
Less than $5,000	20	-
$ 5,000-$ 7,499	29	80
$ 7,500-$ 9,999	19	51
$10,000-$14,999	15	32
$15,000-$19,999	6	17
$20,000 and over	11	11
Total	100%	

N	2,882
"I have no idea".	400
NA	115
Total N	3,397

b) Occupation of Head of Parental Family

	Per Cent
Professional	24
Mgr. or Prop	25
Sales	7
Clerical	5
Skilled	17
Semi-skilled	7
Service	3
Unskilled	4
Farmer, farm worker	8
Total	100%

N	3,271
NA	126
Total N	3,397

c) Father's Education

	Per Cent	Cumulative
8th Grade or Less	22	22
Part High School	17	39
High School Graduate	21	60
Part College	14	74
Bachelor's	12	86
Graduate or Professional degree	13	
Total	99%	

N	3,309
NA	88
Total N	3,397

d) Original Religion

	Per Cent
Protestant	60
Roman Catholic	25
Jewish	8
Other	3
None	3
Total	99%

N	3,320
NA	77
Total N	3,397

TABLE 2.2--Continued

e) Employment During Academic Year

Type	Per Cent
None	47
Part Time	45
Full Time	9
Total	101%
N	3,348
NA	49
Total N	3,397

in this chapter we discuss the construction of these indices as well as the relationships existing between the indices and other variables.)

Table 2.2 a) presents data on the income of the families of the 1961 graduates. One-third reported family incomes of more than $10,000 a year, while one-fifth reported incomes of less than $5,000 a year. The validity of these figures is unknown, but the suggested pattern--a concentration in the "middle income levels" with a larger minority from high income families and a smaller minority from low income families--appears intuitively reasonable.

From Table 2.2 b) we learn that about half of the wage earners in parental families were considered by their children to be professionals or proprietors, about six out of ten had white collar jobs, a little less than a third had urban working-class jobs, and less than a tenth were farmers. Table 2.2 c) completes the picture of the income-occupation-education trinity by demonstrating that 23 per cent of the graduates' fathers were college graduates, 20 per cent had attended some college, 60 per cent had graduated from high school, while one-fifth had not progressed beyond eighth grade. Clearly college graduation represents upward mobility for a considerable number of graduates; the mobility is not as great, however, as a comparison with parental education alone would suggest, since many of the parents obviously had jobs whose income and status were obtainable in the past without college education but are not so obtainable today; thus even though one-fourth of the fathers had graduated from college, one-half were managers or professionals and 30 per cent were earning over $10,000 a year. On the other hand, it is still possible for the offspring of poorly educated working class wage earners to make it to college commencement day. It is no secret, of course, that it is much easier for those who are higher on the socio-economic scale.

The exact nature of religion as a predictor variable is not at all clear; whether religion and ethnicity are status or social psychological factors is by no means settled, although in all probability they are both. The operation of the "religious factor" in the career choices of the 1961 graduates was in some instances quite unpredicted and in other instances not at all surprising;[1] the main line of religious difference seemed to be along the Jew-Gentile dimension, rather than the Protestant Catholic one--despite the predictions of the Protestant Ethic hypothesis. Table 2.2 d) gives the distribution of the sample according to original religion. Protestants are somewhat underrepresented and Jews somewhat overrepresented in comparison with their proportions in the national population (as reported in the 1957 Federal Census study). The one-fourth of the college population which was Catholic was the same as the Catholic population in the national population. The small proportion of "others" turned out to be quite heterogeneous. In examining a sample of the "others" Greeley found that 24 per cent of them were Fundamentalist Protestants, 18 per cent Greek Orthodox, 12 per cent Greek or Polish Catholic, and 10 per cent Mormon. It is worth noting in passing that religious affiliation tends to be stable for the 1961 seniors. Even though there were some shifts--mainly a nine per cent increase in the "nones"--from original religion to present religion, 83 per cent of the seniors were in the same religion at graduation as that in which they were raised.[2]

In summary, even though college does make some upward mobility possible and serve as the occasion for some religious change, the vast majority of college graduates are members of the middle class who belong to the same broad religious and social groups as their parents.

College Experience

What did the 1961 graduates think of their years in college? First off, it is clear that they rather liked their schools. Table 2.3 a) shows that one-third had a very strong attachment to their school, while almost another half were willing to say that they liked

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[1] An extensive analysis on religious variables in the data is currently being conducted by Andrew Greeley, upon whom I have leaned heavily in writing this section.

[2] Andrew Greeley and Joseph Zelan are engaged in an analysis of the correlates of religious apostasy. Their work suggests that college may be the occasion of apostasy but is probably not the cause.

TABLE 2.3

COLLEGE EXPERIENCE

(Representative Sub-sample)

a) Attachment to Present College

	Per cent
Very strong attachment	32
Like it, but not strongly	43
Mixed feelings	19
Don't like it, but not strongly . . .	4
Thoroughly dislike it	2
Total	100%
N = 3,397	

b) Perceived Purpose of College

	Myself	The typical student here
A basic general education and appreciation of ideas	59%	38%
Having a good time while getting a degree.	3	23
Career training	22	30
Developing the ability to get along with different kinds of people	16	9
N	3,354	3,294
NA	43	103
Total N	3,397	3,397

TABLE 2.3--Continued

c) Self-ranking Among Graduates in Same Field

	Per cent
Top ten per cent	23
Top quarter, but not top ten per cent	28
Second quarter	30
Third quarter	14
Lowest quarter	4
Total	99%
N	3,249
NA	148
Total N	3,397

d) Self-reported Grade Point Average

	Per cent
A	1
A-	6
B+	11
B	14
B-	27
C+	26
C	13
C- or lower	2
Total	100%
N	3,365
NA	32
Total N	3,397

e) Feelings about Occupation "College Professor"

	Per cent
This sort of work would be very interesting	42
I don't have the ability to do this kind of work	63
I probably couldn't make as much money at this type of work as I'd like to make	6
One would have to devote too much time and energy to this work. I want to be able to spend more time with my family and friends	22
One would have to invest more time and money in preparing for this occupation than I feel I could afford	22
I know as a personal friend or family friend, one or more people in this field	30
My parents would disapprove of my going into this field	2
My personality isn't suitable for work in this field	31
People with my religious, racial, or family background don't have much chance of success in this field	1
Wouldn't be challenging enough for me	2
I wouldn't like the life I'd have to lead outside the job	5
This is my father's occupation	1
N	3,222
NA	175
Total N	3,397

TABLE 2.3--Continued

f) Importance of Faculty Members and Parents for Career Advice

	Faculty Members	Parents
Very important	19%	20%
Fairly important	38	40
Unimportant	27	26
Never received any	16	12
Total per cent . . .	100%	98%
N	3,283	3,297
NA	114	100
Total N	3,397	3,397

the school but not too strongly. Only six per cent would admit to disliking it. Nor were they personally willing to admit that their judgment on the purpose of college was "vocational"; however, they suspected that their classmates were not inclined to be so "liberal"; as we observe in Table 2.3 b), two-thirds of them thought that a basic education and appreciation of ideas was their own goal in college but only 38 per cent were willing to concede such an objective to the "typical student." Since they are obviously talking about each other, we have a case of confused perceptions. It is especially interesting that only three per cent will admit that they think the purpose of college is having a good time, but one-fourth think that the typical student has such unintellectual intentions.

Table 2.3 c) presents another somewhat unusual phenomenon in the matter of subjective rank. We observe the interesting fact that one-fourth of the students think of themselves as being in the top ten per cent of their class, a half would rate themselves in the top quarter, and only four per cent would admit to being in the lowest quarter. This "selective misperception" (one rules out as metaphysically improbable the likelihood that four per cent can constitute one-fourth) does not seem to apply to the reporting of grade point averages. Table 2.3 d) shows that the grades cover some rough normal curve with 68 per cent being in the B to C+ brackets. (Of course a B at one school may mean something quite different than a B at another school. Later in this chapter we discuss the construction of an Academic Performance Index which weights grade point average by school quality.)

What did the students think of their professors? Two items in the questionnaire enable us to give some answers to this question. Table 2.3 e) shows how the student reacts to the college professor as a career occupation; two-thirds of them find it an interesting profession and two-thirds report having a friend in the field. One is forced to conclude that some of the students actually look on their professors as friends. It is worth nothing, incidentally, that of the six occupations presented for evaluation on this item (research chemist, business executive, high school teacher, M.D., college professor, and engineer), the professor proved far and away the most popular.[3]

A second indication of the student's affection for his professor is to be found in Table 2.3 f). The members of the college faculty seem to be only very slightly less important in helping the student to make a career choice than the student's parents. It would seem that the despair faculty personnel often feel about their contribution to the lives of the young is not altogether justified.

To sum up the reactions of the June, 1961 graduates to their schools: they like the schools and they like their professors, but they are not altogether accurate when they report their relative class standing. They take a "liberal" view of the purpose of education, but do not believe that their fellow students share such a view.

Future Plans

Perhaps the biggest compliment that the graduating seniors have paid to higher education is that they want more of it. Table 2.4 a) shows the graduate school plans of the 1961 class. Only one-fourth have no plans to go to graduate school while almost one-third are planning to go in the coming fall. A college graduate is more likely to go to graduate school that a high school graduate is to go to college.

What kinds of career do these graduates plan for themselves? Tables 2.4 b) c) d) and e) indicate the highly "professional" orientation of the graduates. Eighteen per cent are heading for the arts and sciences, seven per cent for the traditional professions of law and medicine, and 33 per cent for education. Only 18 per cent seem inclined to the business world (and, as we will point out later, it is the less talented ones who plan a business career).

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[3] The present writer in collaboration with Richard McKinlay and Andrew Greeley is engaged in a study of the comparative images of the college professor and the business executive in the minds of the June, 1961 seniors. The college professor is an easy winner.

TABLE 2.4

FUTURE PLANS (as of Spring, 1961)

(Representative Sub-sample)

a) Graduate or Professional School Plans for Fall, 1961

	Per cent
Going to Graduate or Professional school, and accepted by one or more schools	19
Going to Graduate or Professional school, and not yet accepted by one or more schools	12
Going to Graduate or Professional school after Fall, 1961, and have a definite date in mind	30
Going to Graduate or Professional school after Fall, 1961, but no definite date in mind	15
Not going to Graduate or Professional school, but would like to if there were no obstacles	6
Not going to Graduate or Professional school and would not like to	18
Total	100%

N	3,254
NA	143
Total N	3,397

b) Anticipated Career Field

	Per cent
Science	8
Social Science and Humanities	11
Medicine	3
Law	4
Engineering	9
Education	33
Business	18
Other Professions	15
Total per cent	101

N	3,131
NEC, Non-Labor Force, NA	266
Total N	3,397

TABLE 2.4--Continued

c) Characteristics Which Would Be Very Important in Picking a Job or Career

	Per cent
Opportunities to be helpful to others or useful to society	65
Opportunity to work with people rather than things . . .	56
Opportunity to be original and creative	51
A chance to exercise leadership	41
Living and working in the world of ideas	39
Opportunities for moderate but steady progress rather than the chance of extreme success or failure	33
Making a lot of money	24
Freedom from supervision in my work	18
Avoiding a high pressure job which takes too much out of you	16
Getting away from the city or area in which I grew up .	13
Remaining in the city or area in which I grew up	7

N 3,387

NA 10

Total N 3,397

TABLE 2.4--Continued

d) Anticipated Career Employer

	Per cent	
Private company with 100 or more employees .	27	
Private company with fewer than 100 employees or professional partnership . .	11	
Family business	2	
Self-employed	8	
Research organization or institute	7	
College, University, or Junior College . . .	12	
Elementary or Secondary school or school system	33	
Other educational institutions	1	
U.S. Federal Government	14	
State or local government	6	
Hospital, church, clinic, welfare organization, etc.	8	
Other	3	
N		3,144
No answer and not applicable . .		253
Total N		3,397

e) Anticipated Career Activities

	Per cent	
Teaching	50	
Research	24	
Administration	33	
Service to patients or clients . .	24	
None of these	7	
N		3,139
No answer, not applicable		258
Total N		3,397

One of the major reasons for the choice of "professions" is to be found in the occupational values of the students as described in Table 2.4 c). Despite the fears expressed by people who have read The Organization Man and The Lonely Crowd, security and money do not seem to be among the important occupational values of young college graduate Americans. Indeed, the most important value is "opportunities to be useful to others or helpful to society"; "opportunity to work with people instead of things" is second and "opportunities to be original and creative" is third--all three being checked by half of the respondents. Money is checked by one-fourth, security by one-third, and the avoidance of pressure by 16 per cent. One is tempted to suggest that, at least in terms of occupational values, the June, 1961 college graduates seem to be an extraordinarily idealistic lot. (As we will note in the appendix, three values--money, people, and ideas--seem to be the best predictors of occupational choice, as the result of correlation analysis.)

Tables 2.4 d) and e) complete the picture of the future plans of the respondents. In Table 2.4 d) we see that with all their professional inclinations, only 21 per cent of the students see themselves as independent entrepreneurs (self-employed, small company or family business). Most will work for organizations--large companies, educational institutions or governmental agencies. In Table 2.4 e) we note that half of the graduates see teaching as one of their major career activities and one-fourth see research as a major part of their career plans. Once again it would appear that the four year experience of the academic life has left the graduate very well disposed toward this life.

In summary, the June, 1961 college graduate is strongly inclined to intellectual, service and professional pursuits, tends to be something of an idealist, and does not seem to object to working for an "organization."

Self Description

We now have some idea, at least, of who the June, 1961 senior is, and what he wants out of life. But what does he think of himself? A detailed answer to this question would take much further research; however, one of the items on the questionnaire allowed the respondent to rate himself on a list of 24 self-descriptive adjectives. Table 2.5 a) shows the results. The graduating senior refuses to choose between inner-directed man and other-directed man and insists that he is both cooperative and ambitious, while at the same time he is able to be happy, fun-loving and easy-going. On the other hand, he is by no means willing to admit that he is lazy or shy and quite certain that he is neither rebellious nor sophisticated.

Table 2.5 b) turns to four scales of self-description which were in the questionnaire. Only one-fourth were willing to take a stand against modern art and only one-third were prepared to admit that they were conservative politically. (The six per cent who would describe themselves as very conservative seem so small that one wonders if the New Conservatism about which the press is so concerned really has much campus support.) But, even though almost half thought of themselves as politically liberal, this did not imply that the group would describe themselves as either unconventional (30 per cent) or unreligious (16 per cent). Indeed, almost three-fourths thought of themselves as religious.[4] The June, 1961 class may not be well-adjusted, but one can detect in their self-descriptions at least an attempt to be well-balanced.

Index of Background Characteristics

As was mentioned before, many of the background variables are quite closely related. In this section we propose to develop several indices of these related variables to facilitate analysis of the huge amount of data generated in this study.

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[4] In an analysis of materials from a second phase of this study, Greeley found that this perceived religiosity was carried over into very high rates of church attendance when the graduates were a year out of college.

TABLE 2.3

SELF-DESCRIPTION

a) Self-descriptive Adjectives

	Per cent
Eight most frequently mentioned adjectives:	
Cooperative	62
Ambitious	56
Happy	49
Fun loving	46
Easy going	36
Idealistic	33
Athletic	32
Cautious	31
Seventeen adjectives of Intermediate Frequency:	
Calm, Cultured, Energetic, Good Looking, Hard Driving, High Strung, Intellectual, Methodical, Middle Brow, Moody, Obliging, Outgoing, Poised, Quiet, Reserved, Talkative, Witty	
Eight least frequently mentioned adjectives:	
Dominant	12
Shy	10
Impetuous	10
Lazy	9
Forceful	9
Rebellious	9
Sophisticated	7
Low Brow	1

N	3,380
NA	17
Total N	3,397

TABLE 2.3--Continued

b) Attitude toward Modern Art

	Per cent
Very favorable	14
Fairly favorable	34
Neither	26
Fairly unfavorable	17
Very unfavorable	9
Total	100%

N	3,323
NA	74
Total N	3,397

c) Political Orientation

	Per cent
Very liberal	11
Fairly liberal	37
Neither	18
Fairly conservative	28
Very conservative	6
Total	100%

N	3,307
NA	90
Total N	3,397

d) Conventionality

	Per cent
Very conventional	8
Fairly conventional	47
Neither	15
Fairly unconventional	24
Very unconventional	6
Total	100%

N	3,319
NA	78
Total N	3,397

e) Religiosity

	Per cent
Very religious	20
Fairly religious	50
Neither	13
Fairly non-religious	10
Very non-religious	6
Total	99%

N	3,338
NA	59
Total N	3,397

Family position on the three measures of socio-economic status are, of course, strongly related (Table 2.6). The per cent of families with incomes of $10,000 or more ranges from five per cent among the semi-skilled, service, unskilled group to 62 per cent among the professionals; from 14 per cent among the less than high school fathers to 66 per cent among the college graduate fathers. Similarly, the per cent college graduates ranges with occupation from one per cent among the semi-skilled, service, and unskilled, to 72 per cent among those reported as professionals.

Partial correlation tables [2.6 d), 2.6 e)] show that any two of the variables contribute independently toward predicting the third. Thus, among professionals twice as many college graduate families have high incomes as do high school educated families; similarly, in the part college group, the per cent reporting $10,000 or more ranges by occupation from 13 to 64.

Furthermore, the tables show some patterns known to be characteristic of American society, giving us increased confidence in the validity of the measures. While in general professionals make more than managers [Table 2.6 a)], within an educational level managers have higher incomes [Table 2.6 d)]. Sales and clerical families have about the same educational levels as managers [2.6 c)], but their incomes are less [2.6 d)]; there is a considerable gap in income and education between the white collar and the blue collar farm occupations.

It would be extremely interesting to study the independent contribution of each of these variables. What, for instance, is the effect of variations in parental education level on children's career plans, among families with similar incomes and occupations? Are those families with discrepant characteristics (e.g., high income, low education) different in their influence? These characteristics are so strongly associated with each other, however, in comparison with their association with outside variables, that in complex tabulations it is inefficient to use them individually. It is a well-known principle that the best strategy for multivariate prediction is to assemble predictor variables each associated with the dependent variable, but weakly or randomly associated with each other.

TABLE 2.6

SOCIO-ECONOMIC STATUS INDEX: PARENTAL INCOME, FATHER'S EDUCATION, AND PARENTAL OCCUPATION

(Representative Sub-sample)

a) Parental Income and Parental Occupation (per cent reporting parental income of $10,000 a year or more)

Professional	62	(666)
Proprietor, Manager	32	(649)
Sales, Clerical	21	(352)
Skilled	10	(524)
Semi-Skilled, Service Unskilled	5	(450)
Farm, Farm Laborer	13	(207)
Total N		2,848
NA Parental Occupation		34
NA Parental Income		515
Total		3,397

b) Parental Income and Father's Education (per cent reporting parental income of $10,000 a year or more)

Bachelors or More	66	(391)
Part College	40	(608)
High School	25	(609)
Less than High School	16	(1,259)
Total N		2,867
NA Father's Education		15
NA Parental Income		515
Total		3,397

c) Parental Occupation and Father's Education
(Per cent with given education level)

Parental Occupation	Father's Education				Total	
	Bachelor's or More	Part College	High School	Less than High School	Per Cent	N
Professional	72	14	8	7	101	777
Proprietor, Manager	21	21	28	30	100	803
Sales, Clerical	16	24	27	33	100	386
Skilled	2	10	30	58	100	565
Semi-Skilled, Service, Unskilled	1	4	19	76	100	469
Farm, Farm Laborer	5	10	19	65	99	252

Total N	3,251
NA Father's Education	15
NA Parental Occupation	131
Total	3,397

TABLE 2.6--Continued

d) Income by Occupation and Education
(Per cent $10,000 or more)

Parental Occupation	Education					
	High School or Less		Part College		Bachelor's or More	
Professional	36	(94)	31	(91)	70	(476)
Proprietor, Manager. . . .	41	(383)	64	(137)	71	(128)
Sales, Clerical.	16	(216)	23	(82)	40	(53)
Other*.	8	(1,054)	13	(92)	30	(27)

Total N	2,833
NA Parental Occupation. .	34
NA Father's Education . .	15
NA or DK on Income. . . .	515
	3,397

e) Education by Occupation and Income
(Per cent part college or more)

Occupation	Income			
	Under $10,000		$10,000 or More	
Professional	76	(250)	92	(411)
Manager, Proprietor. . . .	28	(311)	53	(337)
Sales, Clerical.	34	(276)	53	(75)
Other*.	9	(1,067)	19	(106)

Total N	2,833
NA Parental Occupation. .	34
NA Father's Education . .	15
NA or DK on Income. . . .	515
	3,397

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*Skilled, semi-skilled, service, unskilled, farm.

TABLE 2.6--Continued

f) Construction of Index of Socio-Economic Status (SES)

I. Distribution of Cases

Occupation of Family Head	Father's Education	Parental Income	
		Under $7,500	$7,500 or More
White Collar* . .	Part College or More	206 (b)	761 (a)
	High School or Less	312 (d)	381 (c)
Blue Collar** . .	Part College or More	67 (f)	52 (e)
	High School or Less	782 (h)	272 (g)
N = 2,833			

*White Collar = Professional, Proprietor or Managerial, Sales and Clerical.

**Blue Collar = Skilled, Semi-skilled, Service, Unskilled and Farm.

II. Assignment of "No Answer" and "Don't Know" on Family Income

Occupation	Education	Per cent with Income of $7,500 or More Among Those Answering	N	N DK or NA	Cell Assignment
Professional . . .	AB or More	83	476	82	a
	Part College	71	91	15	a
	High School or Less	61	94	19	c
Manager, Prop. . .	AB or More	84	128	39	a
	Part College	81	137	30	a
	High School or Less	64	383	85	c
Sales, Clerical .	AB or More	57	53	8	None
	Part College	52	82	11	None
	High School or Less	37	216	16	d
Blue Collar	Post High School	45	121	15	f
	High School	30	274	30	h
	Part High School	27	307	21	h
	8th Grade or Less	23	471	47	h

N = ...	2,833
NA Income Only	418
NA Parental Occupation Only	34
NA Father's Education Only.	15
NA Two or More	97
Total N = ...	3,397

III. Distribution of Cases by Index Scores

Score	N	Per cent
3	927	29
2	743	23
1	682	21
0	880	27
	N = 3,232	100
	NA 165	

Total N = 3,397

Therefore, a pooled Index of Socio-Economic Status (SES) was constructed as follows:

1. Each variable was dichotomized:

Variable	Categories	
	High	Low
Family income	$7,500 or more	Less than $7,500
Father's education .	Part college or more	High school graduate or less
Parental occupation .	Professional, Manager-Proprietor Sales Clerical	Skilled Semi-skilled Service Unskilled Farm

2. Because of the high non-response rates on income (ten per cent circled "I have no idea," three per cent didn't answer the question (NSS) and the high relationship between the other two variables and income, incomes were estimated for non-respondents who reported both of the other variables. Twelve per cent of the total cases were successfully assigned this way [Table 2.6 f)].

3. Scores on SES are the number of high scores on the constituent items.

4. The index has a range from 0 to 3 and each score includes about one-fourth of the cases [Table 2.6 f)].

5. For most analyses the only distinction made is between high (scores 2 and 3) and low (scores 0 and 1).

Family SES varies considerably with the student's race, religion and hometown.

Although Negro college students are undoubtedly recruited disproportionately from the highest SES levels among Negroes, they are characterized by much lower SES scores than other students. Fifteen per cent of the Negroes, in comparison with 54 per cent of the whites, were scored high on SES.[1] [See Table 2.7a)]

TABLE 2.7

CORRELATES OF RACE, RELIGION, HOMETOWN, AND SES

(Representative Sub-sample)

a) Race and SES

Those Who Are	Among Whites		Among Negroes	
	Per cent	N	Per cent	N
High SES	34	(3,067)	13	(100)

N = ... 3,167
NA SES. 98
Race: Other & NA 65
NA Both 67
Total N = ... 3,397

b) Race and Hometown

Those Who Are	Among Whites		Among Negroes	
	Per cent	N	Per cent	N
From larger cities	48	(3,116)	30	(104)

N = ... 3,220
NA Hometown 24
Race: Other & NA 87
NA Both 66
Total N = ... 3,397

c) Race and Religion

Those Who Are	Among Whites		Among Negroes	
	Per cent	N	Per cent	N
Protestant	52		70	
Roman Catholic	26		15	
Jewish	8		0	
None	11		5	
Other	3		11	
	100	(3,117)	101	(102)

N = ... 3,219
Race: Other & NA 86
NA Religion 25
NA Both 67
Total N = ... 3,397

Among whites, SES, hometown and religion are associated in a complex fashion (Table 2.8). In general, high status is associated with larger cities, 62 per cent of those from larger hometowns being high on SES, in comparison with 44 per cent of those from smaller cities. Jewish students come from higher status families (59 per cent high SES) than Protestants (54 per cent) and Catholics (48 per cent). The Catholic-Protestant difference is small and somewhat exaggerated by the removal of Negroes from the tabulation, although Protestants are a little more likely to be high.

As in the general population, there is a striking association between religion and hometown [Table 2.8 c)]. Considering Protestants, Catholics, and Jews, among the white students 27 per cent of the Protestants are from the larger cities, 39 per cent of the Roman Catholics, and 87 per cent of the Jews. Viewing it the other way, while three-fourths of the students from the smaller cities are Protestant, in larger cities the Protestants account for only one-half of the students.

Because religion is strongly associated with city size, it is necessary to examine religion, SES, and hometown simultaneously. When this is done [Table 2.8 a)], a pattern of relationships appears:

1. Among Jews, the hometown difference is reversed, Jewish students from small towns having higher status origins.

2. Among students from larger cities, Protestants and Jews show no SES difference, although there is a considerable one among those from smaller cities.

3. Among students from smaller cities, there is no Protestant-Catholic SES difference, although there is a considerable one for students from larger cities.

What appears to be going on here is a reflection of a basic fact of American social structure, one which has a continual importance for the nation's politics, economy and education. During the last 100 years this country has changed from an essentially rural, Protestant nation to a heterogeneous society through the immigration of low status,

TABLE 2.8

SES, RELIGION, AND HOMETOWN AMONG WHITES WHO ARE PROTESTANT, CATHOLIC, OR JEWISH

a) Per cent High SES

Hometown	Religion			Total	
	Protestant	Roman Catholic	Jewish	Per cent	N
Larger	68 (11,264)	53 (7,768)	68 (3,745)	62	22,777
Smaller	46 (19,139)	44 (5,638)	77 (361)	46	25,138
Total	54 (30,403)	49 (13,406)	69 (4,106)	54	47,915

b) Per cent with Given Religious Preference

Hometown	SES	Religious Preference			Total	
		Protestant	Roman Catholic	Jewish	Per cent	N
Larger	High	53	29	18	100	14,232
	Low	43	43	14	100	8,545
Smaller	High	78	21	2	101	11,686
	Low	76	23	1	100	13,452

TABLE 2.8--Continued

c) Per cent from larger cities - pop. ≧ 100,000

Religion	Per cent	N
Protestant	37	(30,405)
Roman Catholic	59	(13,204)
Jewish	87	(4,306)

N = ...	47,915
Negroes	1,778
Excluded from IBC	6,971
Total: Weighted N	56,664

non-Protestant Europeans into the larger cities. The rapid upward mobility of the Jews has left a sizeable urban, Roman Catholic working class which is, we think, the best single explanation of the asymmetries in Table 2.8. While Catholic students make up 21 per cent of the smaller city high SES category, 23 per cent of the smaller city low SES group, and 29 per cent of the larger city high SES cases, they comprise 43 per cent of the larger city low SES category. Metaphorically speaking, the urban, Catholic working class "pushes up" the SES levels of big city Protestants toward those of the Jews--the highest status ethnic group in the country. Conversely, in smaller cities which have no Catholic working class--the working class is essentially Protestant--Protestants show about the same class levels as Catholics and as a group are lower in status than Catholics from big cities.

We must remember that we are dealing only with the college graduate sons and daughters of these social groups, and differentials in college attendance rates must be considered in interpreting the data. Nevertheless, it is clear that the variables of SES, religion and hometown are so intricately interwoven that they must be considered together. In order to do so, an Index of Background Characteristics was developed (Table 2.9). White Protestants, Catholics and Jews are divided by SES and hometown, giving 12 categories. Negroes make up the 13th category, and are not subdivided by SES, hometown or religion because of the small number of cases. Because, however, Negro students are essentially low status, Protestant, and from smaller cities (Table 2;7), we will use smaller city, lower status, Protestant whites as their comparison group. Eighty-eight per cent of the cases fall into one of the 13 categories on the Index of Background Characteristics, the remainder being Orientals, "Other" on race, "Other" or "None" on religion, or "No answer" on one or more of the constituent items.

Having reviewed race, hometown, religion and SES and their interrelations, let us turn to a very important variable, sex.

When we examine the sex composition of the various groups in the Index of Background Characteristics (Table 2.10), two consistent differences turn up.

TABLE 2.9

INDEX OF BACKGROUND CHARACTERISTICS (IBC)

(Percentage Distribution of Cases--Total Weighted Sample)

Hometown	SES	Race				Total
		White			Negro	
		Religion				
		Protestant	Roman Catholic	Jewish		
Larger	High	15.3	8.2	5.1		28.6
	Low	7.3	7.4	2.4		17.1
Smaller	High	17.8	4.8	0.8		23.4
	Low	20.7	6.1	0.2		27.0
					3.6	3.6
Total per cent		61.1	26.5	8.5	3.6	99.7

N = ... 49,663

Excluded from the Index:

NA on any of the above and other races and other religions 6,971

Total Weighted N = ... 56,664

TABLE 2.10

SEX BY INDEX OF BACKGROUND CHARACTERISTICS

(Per cent Female)

Hometown	SES	Race			
		White			Negro
		Religion			
		Protestant	Roman Catholic	Jewish	
Larger	High	47 (7,596)	39 (4,081)	38 (2,555)	54 (1,778)
	Low	37 (3,650)	28 (3,685)	33 (1,210)	
Smaller	High	46 (8,863)	44 (2.404)	48 (419)	
	Low	36 (10,296)	37 (3,034)	38 (122)	

N = ... 49,693
NA or Excluded from IBC . . . 6,971
Total Weighted N = ... 56,664

In each religion and each hometown grouping, high status groups have a greater per cent of coeds. Among the total group of whites, 44 per cent of the high status students are female in comparison with 35 per cent of the low status students. Attrition during college may play a part in this differential, but our guess is that the disproportion is due to the fact that high status families value and can afford higher education for all their children, lower status families value and can afford it for children who "need it," more often a son than a daughter.

Interestingly, however, among the group with the greatest obstacles to college graduation, the Negroes, we find the highest proportion of women (54 per cent), 18 per cent more than among low status, smaller city Protestants. We have no ready explanation for this fact save that Census data on the per cent of the population enrolled in school for ages 18-19 and 20-24 show a roughly similar pattern.

Academic Performance Index (API)

As might be expected, academic performance, the record of achievement in course work during the four years of college, turns out to be the single most important variable in the analysis of career plans, and is involved in many of the questions put to the data: Are the brightest students going on for postgraduate training? How many of the brightest students are lost to graduate and professional school? Are different fields of work and study getting equal shares of the better students?

Because such questions are very important, it is necessary to begin with a description of the measure of academic performance used in this research. Ideally, perhaps, it would have been desirable to administer intelligence or aptitude tests to the entire sample. Such a procedure was impossible, and even if it were to be done, enormous problems would arise in the choice of dimensions to measure. Therefore, we were led to employ a global measure of intellectual performance--the student's cumulative grade point average. It offered a number of advantages: (a) The data were easy to collect without extracting records or administering tests; (b) Pre-test results indicated that student reports of GPA's are highly accurate when compared with registrars' records; (c) Graduate and professional schools often make use of GPA's as a selection criterion; (d) GPA's tap actual achievement rather than potential and thus get at what a student has "delivered," as well as that which he might be able to do.

There are two drawbacks to the measure, however. First, because both native ability and motivation contribute to grades, GPA's are a composite measure rather than a pure measure of any psychological dimension. Second, GPA's are very much school-bound, and research evidence as well as folklore tell us that a "B" at such-and-such a school is probably worth an "A" at so-and-so, and equivalent to a "C" at some other school. The first problem was ignored, on the assumption that what was wanted was a global measure of performance, rather than a measure of pure psychological factors.

In order to meet the second objection, the following steps were taken:

a. For 114 of 135 sample schools, the research staff of the National Merit Scholarship Corporation[5] very kindly made available average scores for entering freshmen who had taken the test which this organization administers throughout the nation to select candidates for its scholarships. It is known that this test correlates strongly with similar tests such as the Scholastic Aptitude Test administered by the College Entrance Examination Board.

b. For the 21 schools with no National Merit data available, average National Merit scores were estimated on the basis of available data (Phi Beta Kappa chapters, library expenditures, etc.) which correlated with National Merit scores among the other schools in the sample.

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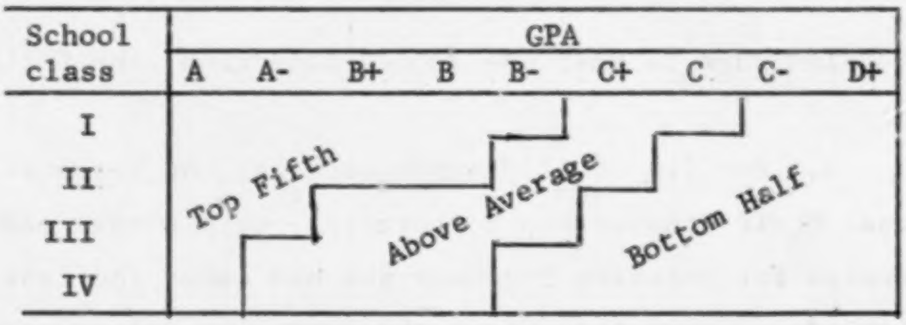
[5] Alexander Astin, John Holland and Donald Thistlethwaite, of National Merit Scholarship Corporation, were unusually helpful in this, as well as many other aspects of the research.

c. On the basis of these scores, the schools were ranked into four classes:

Class	Number of schools	Per cent of students in representative sub-sample
I	11	6
II	12	8
III	71	54
IV	41	32
Total	135	100%
N = 3,397		

d. In each class an arbitrary cutting point on GPA was established as follows:



The effect was to divide the students into three groups:

"Top Fifth"...actually 19 per cent of the students, which consists of straight A students from group IV schools, A and A- students from group III schools, B or better students from group II, and B- or better students from group I. Thus, this high performance group consists of the A students from the schools which graduated 86 per cent of the sample and B and B- students from the small group of highly selective institutions.

"Above Average"...37 per cent of the sample; students from B to A- in group IV; B- to B+ in group III; C+ to B- in group II; and C to C+ in group I.

"Bottom Half"...actually 45 per cent of the sample, whose grade averages were below that of the two groups defined above.

It is, of course, inevitable that such a gross index does injustice to particular students and particular schools, but it is assumed that for comparisons among groups of students, it will show differences similar to those which would have been found from administration of a test to the entire sample.

Whether the disproportions are due to selection, motivation, native ability, or grading biases is unknown, but academic achievement varies with each of the social characteristics discussed so far (Table 2.11). In each comparison: a) Women get better grades than men,[6] b) Students from high SES families do better than those from low SES families, c) Students from larger cities surpass those from smaller ones, d) Jews surpass Protestants and Catholics. In addition, Negro students fall below low SES Protestants from smaller cities. Whether Protestants and Catholics vary in academic performance (API) is less clear. In most comparisons, Protestants are more likely to be high, but among high status females, there is no difference.

No one of these differences is terribly strong, but the effects cumulate producing a range from 78 per cent in the "above average" category among high status, big city, Jewish girls to 39 per cent among Negro males.

These differences are of considerable interest for the light they shed on higher education in America. In addition, they have a number of implications for understanding career decisions. Thus, any profession which tends to attract high status, big city students will get better academic performers on the average, even if API is not part of the formal selection criteria. Conversely, any profession which discriminates against Jews necessarily pays in a loss of high performers. Or again, for many careers men (who will stay in the labor force) and high performers (who will presumably continue to do well)

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[6] When all three categories of API are considered (Table 2.12), it turns out that the big difference is in "above average" and "bottom half." That is, about the same percentage of men and women are in the "top fifth." Very roughly speaking, this supports the general impression that while there is little sex difference in very top grades, "women get the B's while men get the C's."

TABLE 2.11

SEX AND ACADEMIC PERFORMANCE INDEX BY INDEX OF BACKGROUND CHARACTERISTICS

(Per cent High Academic Performance)

SES	Hometown	Sex									
		Male					Female				
		Religion					Religion				
		Roman Catholic		Protestant		Jewish	Roman Catholic		Protestant		Jewish
High	Larger	51	<	61	<	67	73		70	<	78
	Smaller	43	<	53	<	61	66		66	<	71
Low	Larger	47	<	51	<	56	55	<	63	<	66
	Smaller	40	<	42		*	56	<	57		*
Negro				39					46		

*Base N's too small to compare percentages.

Base N's for above table:

SES	Hometown	Male			Female		
		Religion			Religion		
		Roman Catholic	Protestant	Jewish	Roman Catholic	Protestant	Jewish
High	Larger	2,444	4,010	1,563	1,578	3,520	954
	Smaller	1,339	4,686	218	1,035	4,051	198
Low	Larger	2,614	2,278	802	1,013	1,313	394
	Smaller	1,890	6,452	71	1,107	3,621	46
Negro			792			938	

N = ...	48,927
NA or Excluded from IBC	7,737
Total Weighted N	56,664

TABLE 2.12

SEX AND ACADEMIC PERFORMANCE INDEX

Sex	Academic Performance				
	Top Fifth	Above Average	Bottom half	Total	
				Per cent	N
Male	17.0	33.0	50.0	100.0	32,957
Female	21.2	42.1	36.7	100.0	22,802

N = ... 55,759
NA A.P.I. 905
Total Weighted N = ... 56,664

are highly desired, but while 66 per cent of the bottom half are men, only 53 per cent of the top half are, producing a relative scarcity of brighter men.

Because college students as a group are highly selected, and because the students in the sample are the survivors of four academic years of winnowing, the sample as a whole represents an intellectual elite. Nevertheless, there is considerable variation in academic performance within the group, and as measured by the API, the social groupings in which the students fall show wide variation in their average level of performance.

Occupational Interests and Values

Perhaps the longest and most fruitful tradition of research on occupational choice is that concerned with the relationship between generalized interests or values and the choice of specific fields of work. From Strong's pioneering and continued research[7] to the recent Cornell values study[8] strong and stable relationships have been found between values and occupations. While the sources of these values are still obscure and it is not clear whether, over time, values affect occupational choice or occupational choices affect values, or both[9] it is clear that data on such values and interests are exceedingly important in analyzing career plans.

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[7] Cf. E. K. Strong, Jr., Vocational Interests of Men and Women (Stanford University Press, 1943).

[8] Cf. Morris Rosenberg, with the assistance of Edward A. Suchman and Rose K. Goldsen, Occupations and Values (Glencoe, Illinois, Free Press, 1957).

[9] Rosenberg concludes from his panel data on college students that "values have a greater effect on change of occupational choice than the other way around." (Cf. Rosenberg, op. cit., p. 22) A reanalysis of his data, however, shows that among students whose 1950 value and occupational choices were "inconsistent," in 1952, 27 per cent had arrived at consistency by changing their values, 26 per cent had arrived at consistency by changing their job preference, while six per cent had changed both and thus remained inconsistent. This suggests a trend toward consistency, but no clear priority between the two variables.

Our measure of these values[10] is a slightly modified version of the Cornell questionnaire items and is based on answers to the following question: "Which of these characteristics would be very important to you in picking a job or career? (Circle as many as apply.)" The items and frequencies of endorsement (ranging from 65 per cent to seven per cent) were given in Table 2.4 c).

There being two possible combinations of answers to the items it becomes necessary to find a simplification or summary of the information. In order to do so, the intercorrelations of answers to the nine most frequently circled responses (RSS) were computed (Table 2.13), using Yule's Q as the appropriate statistic for attribute data. By simple inspection of the results, three items essentially independent of each other, but each associated with one or more of the remaining items, were selected as tapping four manifest independent dimensions of values. They are:

People: "Opportunity to work with people, rather than things," endorsed by 56 per cent. The item is quite strongly related to "Opportunities to be helpful to others or useful to society," (Q = .55) and moderately related to "A chance to exercise leadership" (Q = .35) and essentially independent of the remaining items.

Original and Creative: "Opportunities to be original and creative," endorsed by 51 per cent. The item is strongly related to "Living and working in the world of ideas" (Q = .68), and is moderately related to "Freedom from supervision in my work" (Q = .36) and "A chance to exercise leadership" (Q = .27).

Money: "Making a lot of money," endorsed by 24 per cent of the sample. It is positively associated with "A chance to exercise leadership" (Q = .41), "Freedom from supervision in my work" (Q = .39), and negatively related to "Opportunities to be helpful to others or useful to society" (Q =-.25).

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[10] We shall use interests and values interchangeably, although there is some difference in the theoretical overtones of the two words.

TABLE 2.13

INTER-CORRELATIONS OF OCCUPATIONAL VALUES

(Representative Sub-sample)
(Q Values)

Values*	Per cent Checking...	People	Original	Money	Steady	Helpful	Ideas	Avoid	Lead	No Super.
People	56		-.01	-.06	.04	.55	.09	.09	.35	-.10
Original . . .	51	-.01		.06	-.17	.11	.68	-.09	.27	.36
Money	24	-.06	.06		.06	-.25	-.05	.14	.41	.39
Steady	33	.04	-.17	.06		.05	-.13	.46	.12	-.05
Helpful . . .	65	.55	.11	-.25	.05		.22	-.09	.10	-.13
Ideas	39	.09	.68	-.05	-.13	.22		.00	.22	.23
Avoid pressure	16	.09	-.09	.14	.46	-.09	.00		-.16	.38
Leadership . .	41	.35	.27	.41	.12	.10	.22	-.16		.21
No supervision	18	-.10	.36	.39	-.05	-.13	.23	.38	.21	

N = 3,397

*People = Opportunity to work with people rather than things;

Original = Opportunities to be original and creative;

Money = Making a lot of money;

Steady = Opportunities for moderate but steady progress rather than the chance of extreme success or failure;

Helpful = Opportunities to be helpful to others or useful to society;

Ideas = Living and working in the world of ideas;

Avoid pressure = Avoiding a high-pressure job which takes too much out of you;

Leadership = A chance to exercise leadership;

No supervision = Freedom from supervision in my work.

("Remaining in the city or area in which I grew up," endorsed by seven per cent, and "Getting away from the city or area in which I grew up," endorsed by 13 per cent, are excluded.)

A case could be made that "Opportunities for moderate but steady progress rather than the chance of extreme success or failure" (endorsed by 33 per cent) constitutes a fourth dimension, but since it does have a slight negative relationship with original and creative (Q = -.17) and because inspection of the data indicated that the discriminations it provides are less interesting in terms of the professions given high priority in this research, it was ignored.

Precisely because the items are independent, they provide a classification of the students' occupational values into eight cells provided by the possible combinations of responses to the three items. These value configurations, as we shall see, are quite strongly related to preference for specific occupations and changes in occupational preference from freshman to senior year.

Although independent of each other, the three value dimensions are correlated with the variables discussed in this chapter. We can conclude this introductory description by examining the relationships between race, religion, SES, hometown, sex, API and occupational value preferences.

"People," or the service dimension is strongly related to sex, but otherwise independent of the other personal characteristics (Table 2.14). Among whites, regardless of API, SES, city size, or religion, two-thirds or more of the women circle this item, while among men the proportion is nearer one-half, ranging from 42 per cent to 57 per cent in various cells of the table. Negro males seem little different from white males, but for some unknown reason Negro females have very low rates of endorsement for this item. Because Negro students were low on endorsement for each of the three values, it is impossible to tell whether Negro females are less people-oriented or whether the occupational values as a group are less important to them. The only other finding on people is negative. Despite the suggestion of Stanley Schachter's The Psychology of Affiliation,[11] it is unrelated to birth order.

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[11] Stanley Schachter, The Psychology of Affiliation (Stanford University Press, 1959).

TABLE 2.14

SEX, ACADEMIC PERFORMANCE INDEX, AND VALUES BY INDEX OF BACKGROUND CHARACTERISTICS

(Per cent Checking "People")

Religion	Hometown	SES	Academic Performance Index			
			High		Low	
			Male	Female	Male	Female
Protestant	Larger	High	45 (2,446)	67 (2,463)	48 (1,547)	72 (1,038)
		Low	42 (1,152)	70 (825)	46 (1,119)	66 (485)
	Smaller	High	47 (2,494)	71 (2,667)	48 (2,176)	69 (1,376)
		Low	43 (2,679)	69 (2,047)	44 (3,746)	70 (1,561)
. . . . Negro			49 (305)	47 (427)	40 (487)	48 (507)
Roman Catholic	Larger	High	48 (1,244)	66 (1,149)	47 (1,196)	67 (427)
		Low	43 (1,215)	66 (553)	48 (1,393)	66 (456)
	Smaller	High	48 (571)	72 (680)	47 (764)	69 (350)
		Low	44 (753)	71 (619)	42 (1,133)	72 (481)
Jewish	Larger	High	50 (1,045)	68 (739)	51 (515)	67 (213)
		High	48 (451)	61 (261)	44 (348)	71 (133)
	Smaller	High	57 (132)	72 (141)	45 (84)	86 (57)
		Low	- (37)	- (25)	- (34)	- (21)

N = ...	48,767
NA, A.P.I.	755
NA, Values Only	160
NA on Both	11
Excluded from IBC	6,971
Total Weighted N = ...	56,664

"Original and creative," which we remember is strongly associated with "Living and working in the world of ideas," is consistently correlated with the Academic Performance Index. The better the student's academic performance, the more likely the endorsement of this item (Table 2.15). While no other variable makes a consistent difference, the association between API and original and creative varies with sex. That is, in each comparison in Table 2.15, API makes a greater percentage difference in endorsement among men than among women. Consequently, while there is no consistent relationship between sex and this value, in each cell of the table, low API men are least likely to endorse the item. An equivalent formulation would be that while there is no sex difference in this response among the higher performers, among the bottom half, men are less likely than women to value originality.

While "People" and "Original-Creative" show simple one-variable relationships, "Making money" has a complicated pattern. To begin with, it is a sex differentiated trait (Table 2.16). Women are much less likely to select this value, and among women endorsement of the item is unrelated to the other variables. Among the men, however, making money is associated with all of the other variables. The differences are rather small but entirely consistent: Making a lot of money is associated with high SES, larger cities, lower academic performance, and with religion, Jews being higher than Catholics, who are, in turn, higher than Protestants. At the extremes, among bottom half API, high SES, larger city, Jewish men, 64 per cent endorse the item, while among high API, small town, low status, Protestant men, 23 per cent circle it. As with the other two items Negroes show lower rates of endorsement.

While most of these findings appear intuitively sensible, the greater interest in people among women, the greater interest in originality among the academically superior, the greater interest in makkng money among the more urban and sophisticated males, our aim is not to untangle the origins of these values but to show how patterns of occupational values, alone and in combination with the other variables, relate to career choice.

TABLE 2.15

SEX, ACADEMIC PERFORMANCE INDEX AND VALUES BY INDEX OF BACKGROUND CHARACTERISTICS

(Per cent checking "Original and Creative")

Hometown	SES	Sex	Religion								
			Protestant			Roman Catholic			Jewish		
			A.P.I.			A.P.I.			A.P.I.		
			High	Low	High Minus Low	High	Low	High Minus Low	High	Low	High Minus Low
Larger	High	F	62 (2,463)	52 (1,038)	10	52 (1,149)	50 (427)	2	74 (739)	61 (213)	13
		M	64 (2,446)	48 (1,547)	16	53 (1,244)	46 (1,196)	7	66 (1,045)	47 (515)	19
	Low	F	56 (825)	45 (485)	11	51 (553)	39 (456)	12	63 (261)	58 (133)	5
		M	63 (1,152)	44 (1,119)	19	54 (1,215)	42 (1,393)	12	60 (451)	52 (348)	8
Smaller	High	F	58 (2,667)	46 (1,376)	12	51 (680)	52 (350)	-1	61 (141)	63 (57)	-2
		M	58 (2,494)	44 (2,176)	14	51 (571)	40 (764)	11	67 (132)	48 (84)	19
	Low	F	45 (2,047)	40 (1,561)	5	55 (619)	41 (481)	14	48 (25)	86 (21)	-38
		M	49 (2,679)	35 (3,746)	14	58 (753)	36 (1,133)	22	62 (37)	26 (34)	36

Academic Performance Index

		High	Low	High Minus Low
Negro	F	33 (427)	34 (507)	-1
	M	43 (305)	30 (487)	13

N = ...	48,767
NA A.P.I. only.	755
NA Values only.	160
NA on Both.	11
Excluded from IBC	6,971
Total Weighted N	56,664

TABLE 2.16

SEX, ACADEMIC PERFORMANCE INDEX, AND VALUES BY INDEX OF BACKGROUND CHARACTERISTICS

(Per cent Checking "Money" Among Males Only)

SES	Hometown	Race							
		White						Negro	
		Religion							
		Protestant		Roman Catholic		Jewish			
		Academic Performance Index		Academic Performance Index		Academic Performance Index		Academic Performance Index	
		High	Low	High	Low	High	Low	High	Low
High	Larger	32 (2,446)	35 (1,547)	36 (1,244)	37 (1,196)	46 (1,045)	64 (515)		
	Smaller	29 (2,494)	32 (2,176)	34 (571)	35 (764)	43 (132)	61 (84)		
Low	Larger	26 (1,152)	30 (1,119)	31 (1,215)	35 (1,393)	34 (451)	47 (348)		
	Smaller	23 (2,679)	24 (3,746)	30 (753)	28 (1,133)	38 (37)	32 (34)		
								18 (305)	20 (487)

N (Male) =	29,066
Excluded: Female	19,701
NA, A.P.I. Only	755
NA Values Only	160
NA on Both	11
Excluded from IBC	6,971
Total Weighted N =	56,664

After reviewing the materials in this chapter, we shall turn, in Chapter III, to the task of using these measures to analyze career choices.

Summary

This chapter has described the June, 1961 college graduates in terms of their distributions on measures of race, size of hometown, socio-economic status, religion, sex, academic performance and three occupational values--people, originality and money. In addition, the patterns of correlation among these characteristics have been presented, both to add to the description of the students and to set the stage for future analyses using various combinations of these variables. Table 2.17 summarizes the interrelationships of these characteristics.

In summary:

Race.

Three per cent of the sample are Negroes. The Negro students, in contrast with the whites, come from smaller cities, are more likely Protestant, show lesser academic accomplishment, are less likely to endorse any of the three occupational values, and include proportionately more females.

Hometown.

About half of the sample come from cities of 100,000 or more or from the suburbs of such cities. The students from larger cities are characterized by higher SES, a lower proportion of Protestants, higher API scores, and, among males, more interest in making money.

SES.

The students are scored on socio-economic status on the basis of family income, occupation of the head of the household, and father's education. High SES students (those possessing two or three of the following: white collar heads of families, parental incomes of $7,500 or more, fathers with part college or more education) comprise about half the sample. High SES is associated with being Jewish or being a larger city Protestant, with being female, with higher academic performance and, among men, with valuing making money.

TABLE 2.17

INTER-CORRELATIONS (Q) OF SEX, ACADEMIC PERFORMANCE INDEX, VALUES, AND BACKGROUND

Inter-Correlations	People	Original and Creative	Money	Sex	A.P.I.	SES*	Hometown*	Prot.+*	R.C.+*	Jewish+*	None
People . . .		-01	-08	-43	04	09	-02	02	-03	02	-18
Original and Creative .	-01		07	03	27	17	16	-02	-08	24	-34
Money . . .	-08	07		48	-11	10	15	-22	12	30	-27
Sex	-43	- 3	48		-27	-20	04	-11	10	05	-29
A.P.I.* . .	04	27	-11	-27		25	16	01	-11	24	-22
SES* . . .	09	17	10	-20	25		34	-04	-07	32	-
Hometown* .	-02	16	15	04	16	34		-56	35	79	-
Protestant*+	02	-02	-22	-11	01	-04	-56				
Roman Catholic*+	-03	-08	12	10	-11	-07	35				
Jewish*+ . .	02	24	30	05	24	32	79				
None	-18	-34	-27	-29	-22	-	-				

* = "Q" computed only among whites who are Protestant, Catholic, or Jewish.

+ = for Protestant the coefficient is based on the dichotomy Protestant vs. Catholic and Jewish; for Catholic the coefficient is based on the dichotomy Catholic vs. Protestant and Jewish: for Jewish the coefficient is based on the dichotomy Jewish vs. Protestant and Catholic.

Original religion.

Protestants are the largest group, comprising 60 per cent of the total sample (RSS). Protestants are disproportionately from smaller cities and among men, less interested in making money. Catholics comprise 25 per cent of the sample, are disproportionately from larger cities, lower SES families, and among males, are more likely to value making money in comparison with Protestants. Jews, who make up eight per cent of the sample, are almost all from larger cities, come from high SES families, show superior academic performance, and, among males, are more interested in making money than are Christians.

Sex.

Six out of ten of the graduates are male. The woman student is characterized by high SES origins, superior academic performance, more interest in working with people, and less interest in making money.

Academic performance.

Academic performance is measured by the student's reported cumulative grade point average, with a small correction for variation among the schools in the ability levels of their students. Women, high SES students and Jews are more likely to be high on API. The higher performing student is more likely to value opportunities to be original and creative.

People.

Fifty-six per cent of the sample endorsed "Opportunity to work with people, rather than things," as important in choosing a job or career. Women are much more likely to endorse the item.

Original and creative.

Fifty-one per cent endorsed "Opportunities to be original and creative." Low API students were less likely to choose this item, particularly among the men.

Money.

Twenty-four per cent of the sample endorsed "Making a lot of money." Men were much more likely to pick this value, and among men it was more frequently chosen by those lower on API, higher on SES and from larger cities. Among men Jews were most likely to choose this value, Protestants least likely. No consistent relationships were found among women students.

CHAPTER III

CORRELATES OF CAREER PREFERENCE: CHANGE AND STABILITY DURING COLLEGE

As the bewildered college freshman shuffles docilely through the endless lines of his first college registration, he stands at one of the crucial choice points in the long series of decisions which constitute vocational choice.

The sheer fact of college attendance amounts to a crucial vocational choice in itself, for in modern America being a "college man" is pretty good insurance against entry into the blue-collar, service and agricultural jobs held by two-thirds of the nation's workers. The dramatic effect of education on occupation is shown in figures from 1959 Census data appearing in Table 3.1.

The details vary by sex, but the theme is essentially the same.

Among men, while high school graduation raises the per cent with white-collar jobs from 24 to 42, the majority of non-college workers have less desirable jobs. In the part-college group, however, the per cent with white-collar positions jumps to two-thirds, and among college graduates 92 per cent have a job where they can wear their old school tie. Considering professional and technical employment only, the difference is even more striking. Sixty per cent of college graduate men have professional jobs, in contrast to 18 per cent of the part-college and six per cent of the high school graduate workers. Even after granting that some skilled workers have better jobs than some men in clerical and sales positions, it is clear that in modern America, college work is the key to desirable white-collar employment for men, and graduation from college is the turnstile for entry into the highly desirable professions.

Among women, the key difference is not college versus high school, but the completion of either. The girl who completes high school raises her chances for a white-collar position from 37 per cent to 72 per cent because secretarial work is open to her. Those girls who complete part-college do better than high school graduates, but their occupational picture is similar, the largest proportion being in clerical work. However, completion of college channels women

TABLE 3.1

MAJOR OCCUPATION OF PERSONS 18 YEARS OLD AND OVER, BY YEARS OF SCHOOL COMPLETED AND SEX: CIVILIAN NON-INSTITUTIONAL POPULATION, MARCH, 1959[a]

Sex	Occupation Group	Education			
		High School		College	
		1 to 3 Years	4 Years	1 to 3 Years	4 years or More
Male	Professional, Technical and kindred . .	2.1%	6.3%	18.2%	59.7%
	Managers, Officials, Proprietors, Clerical, and Sales	21.4	35.2	49.5	31.8
	Total White Collar	23.5%	41.5%	67.7%	91.5%
Female	Professional, Technical and kindred . .	2.2%	7.7%	31.5%	77.7%
	Managers, Officials, Proprietors, Sales	14.1	14.1	14.2	6.4
	Clerical	20.6	50.4	40.6	11.6
	Total White Collar	36.9%	72.2%	86.3%	95.7%

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[a] Table adapted from Current Population Reports, Population Characteristics, Series P-20, No. 99, U.S. Department of Commerce, Bureau of the Census, (Washington, D.C., February 4, 1960), p. 16.

into the professions (more accurately the woman's profession of school teaching), 78 per cent of the college graduate women being classified in the professional and technical group.

While being barred from low paid, less pleasant, low prestige jobs is a tolerable limitation, it is a limitation, and the decision to attend college is a major vocational decision in itself, even though only a third of the students in the sample selected "career training" as the major purpose of college.

At the same time the structure of American education provides the freshman with a chance to start with a clean academic slate. Because college level education is distinct from secondary education, the freshman's specialization during high school still leaves him wide latitude providing that he has the standard package of entrance requirements. Four years later, the time, money, and grades spent and gained will serve to restrict his choice considerably, and practically speaking, it is impossible for an English major to become a professional chemist unless he is free to repeat his undergraduate studies. In the early phases of study, however, the college student has considerable freedom of choice and change of choice.

In sum, the typical college freshman has made no career choice which is irrevocable, save for the fact that he will be choosing among the occupations and professions which in American society are considered most desirable and interesting. Except that he is aiming high, he can during the four years of undergraduate training[1] choose from a considerable variety of occupations and change his mind with relative impunity during the initial years of study.

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[1] The sample studied is, of course, limited to graduating seniors. Since roughly 40 per cent of freshmen never get their bachelor's degree (see John Summerskill, "Dropouts from College" in Nevitt Sanford, ed., The American College (John Wiley and Sons, Inc., 1962), pp. 627-657, we should say "freshmen who will eventually graduate," but for literary purposes in most cases will merely say "freshmen."

The examination of changes in career plans during undergraduate studies raises a number of important questions:

1. How much change is there during college?
2. Which career fields gain and which ones lose?
3. Are there any characteristics associated with stability and instability in career choice?
4. What factors are associated with shifts toward or away from specific career fields?
5. What are the social characteristics of seniors aiming for careers in particular occupations?
6. Do colleges vary in their effects on career choice?
7. What do the findings imply about the possibilities for influencing career decisions in college?

These are indeed important questions and a series of reports from this project will produce detailed answers. At this stage in our continuing research, however, it is possible to sketch out the major trends and directions. In order to do so, it is necessary to group occupations into rather broad categories and deal with only a limited number of variables. Subsequent reports from the continuing project will produce finer shadings and more detailed findings, but the analyses reported here provide a general framework for considering career change from a broad perspective.

In this chapter and the following one we shall consider the answers to questions 1 through 5.

As a matter of fact, Chapters III and IV consist of a discussion of one single gigantic table in which freshman career preference was cross-tabulated against senior career preference for each grouping produced by cross-tabulation of sex, API, occupational values, and the Index of Background Characteristics. Since there are 41,600 possible cells in the table (e.g., high API males who opt for working with people and opportunities to be original and creative, but who do not want to make money and are high status Jews from smaller cities, who started as engineers, but shifted into business) the net result is an impressive poundage of paper which needs to be broken down into separate research questions to yield intelligible conclusions. We shall not reproduce the table, but rather dip into it to treat the following general questions: I) The general process of career decision, II) Factors associated with change and stability, and, in the following chapter, we will treat III) Trends for particular occupations.

I) The General Process

Let us begin with freshman career choices. Each of the graduating seniors was asked to choose from a list of 99 fields his "career preference when you started college."[2] For analytical purposes the answers are grouped as follows: (Fields which constitute 10 per cent or more of the senior choices within a group (RSS) are indicated by placing their percentage in parentheses following the field.)

Physical Sciences

Astronomy, Astrophysics, Chemistry (32), Geography, Geology, Geophysics, Mathematics (27), Metallurgy, Meteorology, Oceanography, Physics (24), Physical Science General and Other.

Biological Sciences

Anatomy, Biology (26), Biochemistry (16), Botany, Biophysics, Entomology, Genetics, Microbiology (11), Pathology, Pharmacology, Physiology, Zoology (14), Other Biological Science Fields.

Social Sciences

Clinical Psychology (20), Social Psychology, Experimental and General Psychology, Other Psychological Fields, Anthropology, Archeology, Economics (13), Area and Regional Studies, Political Science (35), International Relations, Sociology (11), Social Science General and Other.

Humanities and Fine Arts

Fine and Applied Arts (43), English (18), Creative Writing, Classical Languages and Literatures, History (18), Modern Foreign Languages and Literatures (13), Philosophy, Humanities General and Other.

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[2] Since the data do not come from a panel followed through time but from questionnaires gathered at graduation, a number of problems arise: 1) The freshman career preference data are subject to distortion due to recall, 2) While sex and family background characteristics are permanent, values undoubtedly change over time (although such data have been shown to be remarkably stable, and the pretest for the 1962 follow-up shows a striking correlation

Education (Excluding junior college, college and university)

Elementary (28) and Secondary English, Modern Foreign Languages, Latin, Greek, History, Social Studies, Natural Science, Mathematics (all secondary, 28), Physical Education, Music Education, Art Education, Education of Exceptional Children including speech correction, Agricultural Education, Home Economics Education, Business Education, Trade and Industrial, Industrial Arts Education (non-vocational), Counseling and Guidance, Educational Psychology, Administration and Supervision, Education General and Other Specialties.

Engineering

Aeronautical, Civil (17), Chemical including Ceramic, Electrical (33), Engineering Science, Engineering Physics, Engineering Mechanics, Industrial, Mechanical (14), Metallurgical, Mining, Engineering General and Other (11).

Medicine

Law

Other Professional Fields

Dentistry, Nursing (12), Optometry, Pharmacy, Physical Therapy, Occupational Therapy, Veterinary Medicine, Medical Technology, Dental Hygiene, Other Health Fields, Agricultural Sciences, Forestry, Fish and Wild Life Management, Farming, Architecture, City Planning, Journalism, Radio-Television, Communications, Library Science, Theology and Religion (13), Public Administration, Foreign Service, Social Work (11), Home Economics, Military Service.

Business

Industrial and Personnel Psychology, Advertising, Public Relations, Accounting (18), Secretarial, All Other Business and Commercial Fields (65).

The classification is conventional, although it should be noted that "Other Professional Fields" is an extremely heterogeneous group, whose major function is to leave "Business" uncontaminated by technical and professional occupations.

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between 1961 and 1962 answers to the values questions), and academic performance existed only as a potential at entry into college. Since none of this can be helped, rather than presenting continual qualifications and apologies, we shall treat the data as if they come from a panel.

When reported freshman year preferences are classified into these groups (Table 3.2) it is seen that 70 per cent preferred a professional field (Engineering, Medicine, Law, Education, Other Professions), 18 per cent preferred an Arts and Science field, and 12 per cent anticipated careers in Business. Although the data cannot be directly compared with the Census materials, they are suggestive of some professional bias in freshman plans. Seventy-eight per cent of the 1959 employed college graduates were in professional and technical work (see Table 3.1); 18 per cent were in "Business" occupations. Among the freshmen the percentages are 88 and 12. More important, however, is the essential realism of the choices. Although our category system may have forced the results by leaving out "cowboy," "movie star," and "professional athlete," the fact that the distribution is so close to labor force reality and that only eight per cent had no freshman preference, suggests that the entering freshman, although his specific choice is unstable and his knowledge of what specific careers involve is hazy, is already oriented to the general type of occupation which is his future destination. The vast majority of college students come aiming for professional and technical jobs which apply advanced knowledge and the great bulk of them end up in such jobs.

The point is obvious, but under the light of the dazzling halo with which we view higher education it is easy to think of colleges as taking formless putty and molding it into Nobel prize winners and selfless high school Latin teachers. Actually, colleges get young people fairly well along in their career choice process and, if anything, affect choices between alternatives which are not terribly different. The young man who switches from a freshman preference for political science to a senior choice of law may in retrospect credit his college with a powerful effect on this remarkable shift, but the uninvolved researcher may be permitted to ask whether--considering all the forces which narrowed his choices prior to matriculation at the school and how few students shift from political science to medicine--whether college should be credited or blamed as a major factor in career choice.

TABLE 3.2

PERCENTAGE DISTRIBUTION OF RESPONDENTS BY FRESHMAN CAREER FIELD

Fields	Per cent	
Arts and Science Fields	17.6	
Physical Science		6.9
Biological Science		1.8
Social Science		2.5
Humanities		6.4
Professions	70.1	
Engineering		15.8
Medicine		5.5
Law		3.7
Education		26.9
Other professions		18.2
Business and Related	12.4	
Total	100.1%	

N =	48,993
"None"	4,384*
NA or NEC	3,287
Total Weighted N =	56,664

* = 8.2 per cent of cases which are not NA or NEC.

Consistent with the assumption that the decision process is well under way when college begins is the fact that freshman choices are far from randomly distributed among the various categories of students. Considering the background items described in Chapter II--sex, Academic Performance Index, occupational values, and Index of Background Characteristics--Table 3.3 shows a number of fairly strong relationships. (A "Q" of zero means that students with and without the given characteristic are equally likely to report a given occupation as a freshman choice, a positive "Q" means that students with the characteristic were more likely to report it, a negative "Q" means that students with the particular characteristic were less likely to choose that occupation.)

Arbitrarily choosing a "Q" of .15 as worth noting, we find the following associations between our background characteristics and the career fields:

Physical Sciences were underchosen by those oriented toward working with people ("Q" = -.49), Negroes ("Q" = -.33), overchosen by men ("Q" = .30), those destined for high academic performance ("Q" = .26), those opting for originality ("Q" = .26), students from larger cities ("Q" = .18), underchosen by Protestants ("Q" = -.17), and overchosen by Catholics ("Q" = .17).

Biological Sciences were underchosen by students oriented toward working with people ("Q" = -.43), overchosen by Negroes ("Q" = .36), underchosen by men ("Q" = -.19) and those oriented to making money ("Q" = -.17).

Social Sciences were overchosen by Jews ("Q" = .34), Negroes ("Q" = .33), students from larger cities ("Q" = .31), future high API students ("Q" = .28), those oriented toward working with people ("Q" = .23), those from high SES families ("Q" = .22), underchosen by men ("Q" = -.18) and Protestants ("Q" = -.16)

TABLE 3.3

CORRELATIONS: FRESHMAN CAREER FIELD BY SEX, API, VALUES, AND BACKGROUND INDEX

Variable		Field									
		Phy. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Med.	Law	Engin.	Educ.	Other Prof.	Bus.
Sex:	Male	+.301	-.190	-.177	-.438	+.508	+.730	+.977	-.730	-.246	+.521
API:	High	+.257	+.062	+.278	+.234	+.245	+.180	-.106	-.051	-.038	-.233
Values:	People	-.491	-.433	+.233	-.047	+.094	+.075	-.552	+.432	+.169	-.001
	Original & creative	+.255	+.082	+.067	+.467	-.040	-.091	+.146	-.066	-.099	-.304
	Money	+.107	-.174	-.071	-.259	+.040	+.416	+.335	-.472	-.242	+.430
SES:	High	+.026	+.082	+.215	+.192	+.370	+.435	-.120	-.184	.000	-.014
City:	Larger	+.177	+.043	+.307	+.054	+.211	+.258	+.051	-.233	-.142	+.138
Religion:	Protestant	-.166	-.112	-.158	.000	-.231	-.401	+.017	+.168	+.197	-.137
	Catholic	+.156	+.073	+.002	-.014	+.049	+.297	+.019	-.140	-.146	+.151
	Jewish	+.082	+.128	+.335	+.031	+.400	+.331	-.100	-.145	-.220	+.013
Race:	Negro	-.330	+.361	+.327	-.263	+.076	-.306	-.428	+.240	+.235	-.398

Humanities and Fine Arts were overchosen by those seeking originality (Q = .47), underchosen by men (Q = -.44), Negroes (Q = -.26) and those who wanted to make money (Q = -.26), overchosen by future high academic performers (Q = .23) and students from high SES families (Q = .19).

Medicine was overchosen by men (Q = .51), Jews (Q = .40), students from high SES families (Q = .37), future high academic performers (Q = .24), underchosen by Protestants (Q = -.23) and overchosen by those from larger cities (Q = .21).

Law was overchosen by men (Q = .73), students from high SES families (Q = .44), and students who want to make a lot of money (Q = .42), underchosen by Protestants (Q = -.40), overchosen by Jews (Q = .33), Catholics (Q = .30), those from larger cities (Q = .26), and those who later became high academic performers (Q = .18).

Engineering was overchosen (to say the least) by men (Q = .98), underchosen by those who want to work with people (Q = -.55), and Negroes (Q = -.43), and overchosen by those who want to make a lot of money (Q = .34) and those who want to be creative and original (Q = .15).

Education was underchosen by men (Q = -.73), and those wanting to make a lot of money (Q = -.47), overchosen by those oriented toward working with people (Q = .43), and Negroes (Q = .24), underchosen by students from larger cities (Q = -.23), and those from high SES families (Q = -.18), and overchosen by Protestants (Q = .17).

Other Professions were underchosen by men (Q = -.25), and students desiring to make a lot of money (Q = -.24), overchosen by Negroes (Q = .24), underchosen by Jews (Q = -.22), overchosen by Protestants (Q = .20) and those oriented toward working with people (Q = .17), and underchosen by Catholics (Q = -.15).

Business was overchosen by men (Q = .52) and those who want to make a lot of money (Q = .43), underchosen by Negroes (Q = -.40) those desiring originality and creativity (Q = -.30) and those who became high academic performers (Q = -.23), and overchosen by Catholics (Q = .15).

These findings contain a few surprises (it is an article of faith among contemporary intellectuals that Social Scientists come from low status families and Roman Catholics are anti-science, but the freshman choice data here show the reverse of both of these stereotypes) along with a considerable number of non-surprises (money-oriented students don't choose Education as freshmen, freshmen who choose Engineering are not oriented toward working with people) but these findings should not be given too much weight because not all of the relationships hold when other factors are held constant, and some of them change during college, such changes being the major interest of this chapter.

Without claiming much for any one of the coefficients, in total they support the idea that the freshman brings with him a tentative career choice which has been affected by his previous environment, sex role, intellectual ability, and (assuming some constancy over the four years) occupational values.

Now let us see what happens during college.

How much change do we find between the freshman and senior years? The estimate is necessarily an artifact of the classification used, and the finer the categories the greater the proportion of cases which will show a difference between freshman and senior choices. Undoubtedly if we studied expectations regarding specific details of the job, every student would show some change. Using the broad ten-field classification presented above, data presented in Table 3.4 can be re-calculated to show that 37 per cent shifted from one category to another. Since some of the categories are very broad (e.g., Other Professions) so that some real change is lost, and since eight per cent had no initial preference, it would appear that around half of the students report some meaningful career shift or development during college.

TABLE 3.4

FRESHMAN CAREER ASPIRATIONS AND ANTICIPATED FUTURE CAREER

a) Per cent with Given Anticipated Future Career, by Freshman Career

Freshman Career Aspirations[a]	Anticipated Future Career[a]										Total	
	Educ.	Bus.	Other	Law	Engin.	Phy.	Hum.	Med.	Bio.	Soc.	Per cent	N
Education . . .	84.8	3.2	5.2	0.4	0.4	0.9	3.2	0.0	0.8	1.1	100.0	12,619
Business . . .	12.6	72.6	5.8	3.1	0.5	1.0	1.5	0.3	0.3	2.2	99.9	5,763
Other Prof. . .	20.5	7.1	57.3	1.6	0.9	1.0	5.4	0.8	2.3	3.0	99.9	8,411
Law	7.2	15.6	9.8	56.3	0.2	0.7	5.1	0.7	0.2	4.3	100.1	1.708
Engineering . .	7.4	18.8	5.7	3.2	51.3	0.8	1.7	1.2	0.7	2.0	100.0	7,398
Physical Sci. .	11.2	9.6	6.9	2.6	4.4	50.7	4.6	2.7	3.3	4.1	100.1	[illegible],231
Humanities . .	24.9	6.2	9.5	1.2	0.4	1.5	49.7	0.8	0.9	4.9	100.0	2,953
Medicine . . .	8.8	9.1	11.0	5.6	1.4	4.4	4.9	43.5	6.7	4.7	100.1	2,643
Biological Sci.	23.2	4.4	10.9	1.3	2.6	3.4	4.8	3.7	41.6	4.0	99.9	833
Social Science.	23.1	12.1	14.2	4.1	0.7	1.4	7.8	0.4	0.5	35.8	100.1	1,135
None	31.5	24.9	15.4	2.5	5.7	3.8	8.7	1.1	1.5	5.0	100.1	3,123

Total	49,817
NA Freshman Career only . . .	2,834
NA Future Career only	3,560
NA both	453
Weighted N	56,664

---

[a] Ranked by per cent not changing career fields (main diagonal).

TABLE 3.4--Continued

b) Per Cent with Given Freshman Career Aspirations, by Anticipated Future Career

Anticipated Future Career[b]	Freshman Career Aspirations[b]											Total	
	Engin.	Med.	Educ.	Other	Phy.	Bus.	Law	Hum.	Bio.	Soc.	None	Per cent	N
Engineering	87.1	0.8	1.1	1.8	3.2	0.7	0.1	0.3	0.5	0.2	4.1	99.9	4,360
Medicine	5.8	76.0	0.3	4.2	5.8	1.0	0.8	1.5	2.0	0.3	2.2	99.9	1,513
Education	3.3	1.4	64.5	10.4	2.2	4.4	0.7	4.4	1.2	1.6	5.9	100.0	16,578
Other Professions . .	5.4	3.7	8.2	60.8	2.8	4.2	2.1	3.5	1.1	2.0	6.1	99.9	7,925
Physical Sciences . .	20.9	4.1	3.9	3.1	58.1	2.1	0.4	1.6	1.0	0.6	4.2	100.0	2,817
Business	16.3	2.8	4.7	7.0	3.6	49.1	3.1	2.1	0.4	1.6	9.1	99.8	8,523
Law	12.1	7.5	2.7	7.0	4.0	9.1	48.7	1.8	0.6	2.3	4.0	100.0	1,974
Humanities	3.7	3.9	12.3	13.7	4.4	2.7	2.6	44.4	1.2	2.7	8.2	99.8	3,302
Biological Sciences .	4.7	16.3	9.8	17.8	10.0	1.7	0.4	2.5	32.1	0.6	4.2	100.1	1,081
Social Sciences . . .	8.5	7.0	8.1	14.7	7.7	7.2	4.2	8.4	1.9	23.3	9.0	100.0	1,744

Total	49,817
NA Freshman Career only	2,834
NA Future Career only	3,560
NA both	453
Weighted N	56,664

---

[b] Ranked by per cent with same Future and Freshman Career (main diagonal).

The discrepancy between this high percentage and the previous discussion minimizing the effects of college is a function of perspective. The fairest conclusion, perhaps, is that college students maintain a constant orientation toward the professions and white-collar jobs, but within this limited part of the world of occupations show rather high rates of shifting during college.

In order to analyze the dynamics of change for particular fields, it is necessary to organize the data in particular ways which best reveal the important trends. Although dignified by the title of "turn-over analyses" in survey research and by "Markov processes" in mathematics, in essence all that is involved is a simple four-celled table like the following:

		Senior Preference	
		Occupation X	All Other
Freshman Preference	Occupation X	"Loyalists"	"Defectors"
	All Other	"Recruits"	All Other

For any particular occupation there are four types of people: "Loyalists"--those who choose the occupation as freshmen and as seniors; "Defectors"--those who choose the occupation as freshmen, but who shift out as seniors; "Recruits"--those who choose some other occupation as freshmen, but who choose Occupation X as seniors; and a residual group who chose Occupation X neither time.[3]

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[3] Technically speaking, we are treating as a finite process one which is actually continuous over time. Although in fact some students change their minds several times during the four years of college, our analysis will proceed as if there are only two instants of time, the day the freshman year started and the day of graduation.

Here, for instance, is the distribution of cases (TWS) for the field of Education:

		Senior		
		Education	Other	Total
Freshman	Education	10,697	1,922	12,619
	Other & None	5,881	31,317	37,198
	Total	16,578	33,329	49,817

NA Freshman career only . .	2,834
NA Future career only . .	3,560
NA both	453
Total N = ...	56,664

...Or in terms of a percentage table:

		Senior		
		Education	Other	Total
Freshman	Education	21.5	3.9	25.4
	Other & None	11.8	62.9	74.7
	Total	33.3	66.8	100.1%

While such a table could be analyzed in terms of the remarkable consistency of plans over time (84 per cent of the sample retained their freshman preference for or against Education; the association between freshman and senior plans for Education has a Q coefficient value of +.96) it is more interesting to look at the changes. We note that 3.9 per cent of the sample shifted out of Education, while 11.8 per cent shifted into Education. Necessarily the per cent of students in Education rose by the difference between 3.9 and 11.8, or 7.9 per cent. Among freshman choices 25.4 per cent went to Education, while at graduation time this had risen to 33.3 per cent.

The increase or decrease in the proportion for a given field is thus a function of the difference between its number of defectors and its number of recruits. A field with a large number of defectors will increase over time if it manages to obtain an even larger number of recruits.

A less direct, but eventually more useful method of looking at this phenomenon is through the analysis of what are called "transition probabilities" or the chances that a person in a given "state" at a given time will have shifted out at a later time. In our example there are two states (Education and Other) and we can calculate the two transition probabilities by 1) dividing defectors by the total freshmen choosing Education and 2) dividing recruits by the total freshmen not choosing Education.

Transition Probabilities

Freshman State	P	N
Education	.152	12,619
Other	.158	37,198

Re-stated in probability terms, the two types of change are remarkably similar. About 15 per cent of those originally in Education shifted out, and about 15 per cent of the remainder shifted into Education. Why does Education grow in size when the two trends are equally probable? The answer is absurdly simple--15 per cent of a big number gives more cases than 15 per cent of a small number. Since many more people were out of Education than in it when college began, applying the same transition probabilities to the two states produced more recruits than defectors in absolute numbers and an increase in Education as a career field.

The point is so simple that we may appear to be belaboring it, but this phenomenon plays an important role in the analysis to be reported so it may be worth some attention.

The discussion so far can be summarized by saying that the net increase or decrease for a given state is a function of three independent parameters: 1) the transition probability for those in the state at $time_1$, 2) the transition probability for those outside the state at $time_1$, and 3) the initial proportion in the state at $time_1$.

The odd quirk here is that the effect of initial size is the opposite of that which common sense might suggest. In a situation somewhat akin to "regression," it follows necessarily that the larger the state is at $time_1$, the more likely it is to shrink rather than grow. In the example of Education, for instance, since the two transition probabilities were about equal, Education grew essentially because most freshmen were not in Education. If, with the same transition probabilities, a majority of freshmen had chosen Education, the field would have declined. The point is more than a statistical curiosity, since we shall see that the net change in several of our fields comes mostly from their initial size, and in a subsequent chapter this principle will be used to explain why the "most effective" colleges and universities show net losses in their proportion of students going into key fields.

To repeat, we expect that career fields will expand during the college years if they either: retain a high proportion of their original adherents, recruit a high proportion of those originally outside the field, or were small to begin with.

We are now ready to examine the data for the ten fields in the study.

Table 3.5 presents the raw figures and calculations necessary to analyze the net change in each of the fields, according to the scheme presented above.

In terms of transition probabilities, there is considerable variation in the proportion of freshmen retained by various fields (Table 3.5, row B). At one extreme Education lost only 15 per cent of its freshmen, while at the other, 64 per cent of those freshmen

TABLE 3.5

CAREER FIELD TURNOVER SUMMARY

Turnover	Field										
	Education	Business	Social Science	Humanities	Biological Science	Other Professions	Law	Physical Science	Medicine	Engineering	None
Numbers											
Choosing Field as Freshmen .	12,619	5,763	1,135	2,953	833	8,411	1,708	3,231	2,643	7,398	3,123
"Loyalists"	10,697	4,185	406	1,468	347	4,821	967	1,637	1,150	3,798	-
"Defectors"	1,922	1,578	729	1,485	486	3,590	741	1,594	1,493	3,600	3,123
"Recruits"	5,881	4,338	1,338	1,834	734	3,104	1,007	1,180	363	562	-
Recruits minus Defectors . .	+3,959	+2,760	+ 609	+ 349	+ 248	- 486	+ 266	- 414	-1,130	-3,038	-3,123
Proportions											
Proportion of Freshman Choices . . . . A .	0.253	0.116	0.023	0.059	0.017	0.169	0.034	0.065	0.053	0.148	
Transition out . . . B .	0.152	0.274	0.642	0.503	0.584	0.427	0.437	0.493	0.565	0.487	
Loss (AxB) = ... C .	0.038	0.032	0.015	0.030	0.010	0.072	0.015	0.032	0.030	0.072	
Proportion not in Field as Freshmen (1.00-A) . D .	0.747	0.884	0.977	0.941	0.983	0.831	0.966	0.935	0.947	0.852	
Transition in . . . . E .	0.158	0.098	0.027	0.039	0.015	0.075	0.021	0.025	0.008	0.013	
Gain (DxE) = ... F .	0.118	0.086	0.026	0.037	0.013	0.062	0.020	0.023	0.008	0.011	
Net Change F-C = . . G .	+0.080	+0.054	+0.011	+0.007	+0.003	-0.010	+0.005	-0.009	-0.022	-0.061	
Per cent Change G/A . H .	+ 32	+ 47	+ 48	+ 12	+ 18	- 06	+ 15	- 14	- 42	- 41	
Recruits as Per cent of Defectors	306	275	184	124	151	86	136	74	24	16	

N = ... 49,817
NA Freshmen Only 2,834
NA Seniors Only 3,560
NA Both 453

Total Weighted N = ... 56,664

who had opted for a Social Science career had abandoned the field at the time of graduation. From the most to least retentive fields we find: (numbers in parentheses are the transition probabilities expressed in per cents); Education (15), Business (27), Other Professions (43), Law (44), Engineering (49), Physical Sciences (49), Humanities (50), Medicine (56), Biological Sciences (58), and Social Sciences (64). Thus, even though Education and Business have considerable holding power in the Arts and Sciences, Medicine, and Engineering, a majority of the freshmen abandon their original career preference.

Viewed in terms of recruitment, we get a somewhat different ranking of fields. Ordered in terms of the per cent of freshmen originally outside who were recruited to the field (Table 3.5, row E), we see: Education (16), Business (10), Other Professions (8), Humanities (4), Social Sciences (3), Physical Sciences (2), Law (2), Biological Sciences (1), Engineering (1), and Medicine (1).

Some fields expand and some decline during the four years of college. Ordering the fields in terms of their absolute gain and loss (Table 3.5, row G), we find: (number in parentheses is the increase or decrease in the per cent of students choosing the field) Education (+8.0), Business(+5.4), Social Sciences (+1.1), Humanities'(+0.7), Law (+0.5), Biological Sciences (+0.3), Physical Sciences (-0.9), Other Professions (-1.0), Medicine (-2.2), and Engineering (-6.1).

Still another way of viewing the changes is in terms of increase or decrease proportional to the number of original entrants in the field, (Table 3.5, row H). Ordered from greatest percentage increase to greatest percentage decrease are: Social Sciences (+48), Business (+47), Education (+32), Biological Sciences (+18), Law (+15), Humanities and Fine Arts (+12), Other Professions (-6), Physical Sciences (-14), Engineering (-41), and Medicine (-42).

As the order of fields in these various measures of change varies, it is clear that there are various dimensions of change and that no one of them tells the entire truth. One (among several) way of summarizing the results is given in Table 3.6, which cross-classifies fields by their defection rates and recruitment rates expressed as a per cent of defectors.

Inspection of the table suggests three major categories.

Education and Business are, by any of the criteria one chooses, the big gainers over the college years. They have the lowest loss rates (transition probabilities for those in the field as freshmen), recruit the largest number of newcomers in absolute terms, show the largest absolute increase, and, except for Social Sciences, show the largest proportional increases, all of this in the face of the initial "handicap" that being big fields, their initial size works against them. We shall see soon that they attract very different types of students, but the strongest gravitational pull in the data is the 13.4 per cent net increase in the number of students in Education and Business careers.

The remaining fields have remarkably similar and rather high loss rates. In comparison with the 27 per cent defection rate in Business, all the remainder lose 43 per cent or more of their freshmen. In addition, within these fields, loss rates are unrelated to net change. Social Sciences have the highest loss rate, but end up with the greatest proportional increase over the four years. Other Professions have the lowest losses in this group, but show a net decline.

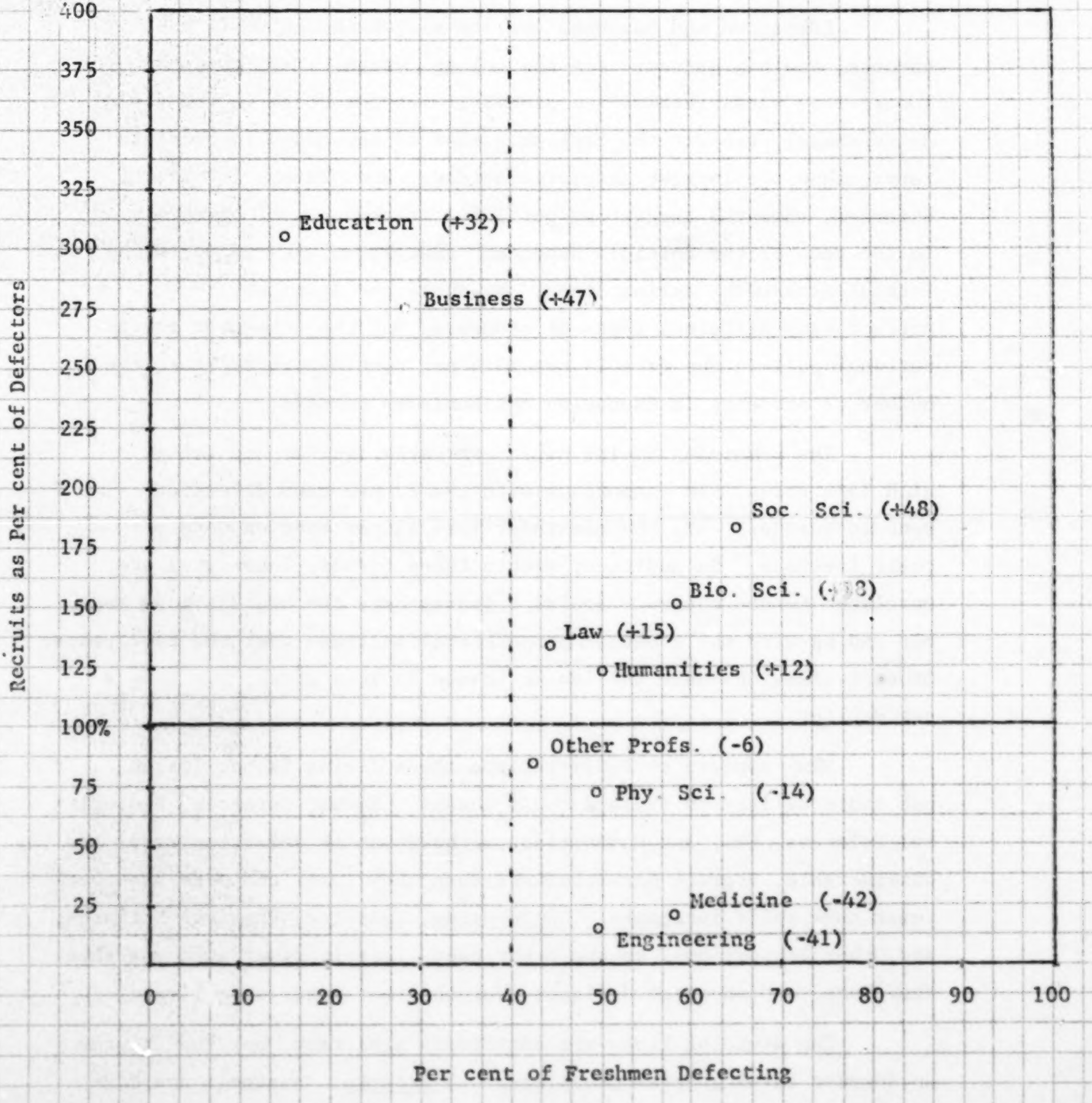
What appears to differentiate these fields is not losses but their ability to replace their losses. Social Sciences, Biological Sciences, Law, and Humanities, although their defection rates are considerable, attract more students than they lose, and over the four years show solid increases. Engineering, Medicine, Physical Sciences, and Other Professions, on the other hand, recruit fewer students than they lose, and show net declines over the four years of college.

The dividing lines are admittedly arbitrary, but the figures do suggest three general groupings: 1) Gainers: Business and Education, the two fields with low losses, high gains, and net increases;

TABLE 3.6

CAREER FIELD TURNOVER SUMMARY GRAPHED (Data from Table 3.5)

Note (+N) = proportional increase or decrease



2) Losers: Medicine, Engineering, Physical Science, and Other Professions, the fields with high loss rates and recruitment rates which do not replace the losses; 3) Traders: Social Sciences, Biological Sciences, Law, and Humanities, the fields with high loss rates and recruitment rates which more than compensate for the defections.

We can conclude the description of the general process of career change during undergraduate studies by treating the ten fields as a system of interrelated origins and destinations rather than by considering them one at a time as in the previous paragraphs. From this point of view, the ten fields may be thought of as involved in a process of exchanging undergraduates over time. Each of the ten sends some of its original supply of students to each other field, and each receives a number of students back. If at the end of four years the books are added up, the net gain or loss between specific pairs of fields can be determined. Thus, for example, while both Physical Sciences and Engineering show over-all "losses" on their exchanges, this does not mean that each loses in comparison with each other field, and obviously both fields cannot lose more than they gain from each other.

As a measure of specific turnover between field A and field B, we can take the total number of students shifting from B to A and divide it by the total shifting from B to A plus those moving from A to B. A figure of 50 per cent means that just as many students changed from A to B as from B to A, a number greater than 50 means that field A gained relative to field B, and a figure of less than 50 means that field A lost students to B.

The results are presented in Table 3.7, where a definite pattern emerges, all entries to the right of the diagonal being greater than 50 per cent and all entries to the left of the diagonal being less than 50 per cent (necessarily, since the index for B to A is simply 100 minus the index for A to B). Putting the results another way, the fields are ordered in such a way that (considering the rows) every field gains students from each field below it and loses to each field above it.

TABLE 3.7

INDEX OF NET GAIN IN CAREER FIELD INTERCHANGE

Field	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law.	Phy. Sci.	Med.	Engin.	Total
Educ. .	+	64 (1,126)	65 (403)	64 (1,140)	65 (299)	73 (2,371)	70 (177)	77 (471)	98 (238)	92 (595)	72 (6,820)
Bus. .	36 (1,126)	+	52 (262)	67 (272)	67 (55)	64 (936)	59 (442)	84 (368)	94 (256)	98 (1,422)	69 (5,139)
Soc.Sci.	35 (403)	48 (262)	+	62 (234)	85 (39)	61 (418)	62 (120)	89 (150)	96 (128)	95 (156)	62 (1,910)
Hum. .	36 (1,140)	33 (272)	38 (234)	+	60 (67)	62 (734)	71 (122)	77 (191)	85 (153)	91 (135)	52 (3,048)
Bio.Sci.	35 (299)	33 (55)	15 (39)	40 (67)	+	68 (283)	- (15)	79 (136)	85 (207)	70 (73)	59 (1,174)
Other Profs.	27 (2,371)	36 (936)	39 (418)	38 (734)	32 (283)	+	55 (305)	72 (309)	82 (354)	84 (504)	42 (6,214)
Law . .	30 (177)	41 (442)	38 (120)	29 (122)	- (15)	45 (305)	+	88 (96)	92 (160)	98 (243)	55 (1,680)
Phy.Sci.	23 (471)	16 (368)	11 (150)	23 (191)	21 (136)	28 (309)	12 (96)	+	57 (203)	81 (731)	40 (2,655)
Med. .	2 (238)	6 (256)	4 (128)	15 (153)	15 (207)	18 (354)	8 (160)	43 (203)	+	70 (124)	18 (1,823)
Engin..	8 (595)	2 (1,422)	5 (156)	9 (135)	30 (73)	16 (504)	2 (243)	19 (731)	30 (124)	+	10 (3,983)

Cell entry for row A, Col. B = I/I+II where...

	senior A	senior B
Freshman A		II
Freshman B	I	

Number in parentheses = N = I+II.

N = ... 17,223
No change 29,471
Freshman Career "None" 3,123
NA, NEC Freshman Career 2,834
NA, NEC Senior Career 3,560
NA on Both 453

Total Weighted N = ... 56,664

Consider, for instance, Education in the top row. Reading across we see that each entry in the top row is greater than 50 per cent, which means that for each comparison (Education-Humanities; Education-Law, etc., etc.,) more students shifted from the comparison field into Education than shifted from Education into the comparison field. At the opposite extreme, in the bottom row, it is seen that Engineering loses more students to each of the other fields than it gains from each. In between, the patterns are not totally one way or the other. Business, for example, shows a net gain _vis-a-vis_ eight fields, but loses more students to Education than it gains. Similarly, while we have seen that Law is an over-all gainer, it actually shows a net loss to Education, Business, Social Sciences, and Other Professions, its general increase being due to gains of recruits relative to its losses to Physical Sciences, Medicine, Engineering.

By and large, the results of this analysis confirm the impressions of the previous materials, Education and Business being the big gainers, Medicine and Engineering being the big losers. Some of the particular entries are worth noting, however. While Physical Sciences does gain from Medicine, the index of 57 per cent means that the exchange is near even, just about the same number of students moving from Physical Sciences to Medicine as from Medicine to Physical Sciences. Similarly, the exchange between Social Sciences and Business is very near even (52 - 48) as is the exchange between Law and Other Professions (55 - 45).

Perhaps the most important implication of Table 3.7 is the _generality_ of the trends for particular fields. Those fields which show gains in general also show them in comparisons with other specific fields; those occupational groups which show over-all losses tend to show losses across the board; those in between show gains from the "losers" and losses to the "gainers." The fact that gain and loss rates seem to be general, in turn, suggests that growth and decline in particular fields cannot be explained by particular "leakages." For example, some have claimed that Medicine is suffering from competition with Natural Science fields with their more plentiful stipends. Our data do, indeed, show that Medicine loses more students to the sciences than it gains...but it also loses to every other field except Engineering.

The impact of particular competitors on the increase or decrease in particular fields is shown in Tables 3.8 and 3.9. In Table 3.8 the absolute increase and decrease in cases (TWS) is given for each pairing of fields. The entry in the diagonal gives the over-all change, and the cell entries give the net turnover for pairs of occupations. The +349 in the diagonal cell for Humanities means that between the freshman year and senior year the Humanities and Fine Arts added 349 more cases than they lost to other fields. The other cells in that same row show how this total arose...from a 328 case net loss to Education, a 13 case net gain vis-a-vis Biological Sciences, the addition of 271 cases who had no freshman career plans, etc., etc.

There are 49,817 cases (TWS) with information on both freshman and senior career preferences. Consequently, any cell in Table 3.8 with 498 or more cases represents a net increase or decrease of one per cent or more in the per cent of all students in the occupations in question. Five such cells can be located in the table: a) a 1,360 case (2.7 per cent) net shift from Engineering to Business; b) a 1,069 case (2.1 per cent) net shift from Other Professions to Education; c) a 983 case (2.0 per cent) net shift from None to Education; d) a 777 case (1.6 per cent) net shift from None to Business; and e) a 497 case (1.0 per cent) net shift from Engineering to Education. All the remaining exchanges in the table, however, affect the percentage distributions of occupational preference by less than one per cent.

In Table 3.9 b) the same figures are expressed as a percentage of freshman choices in each field, in order to see their consequences for the particular occupational groups. In Table 3.9 b) the +11.8 in the diagonal for Humanities means that the

TABLE 3.8

CAREER FIELD NET TURNOVER

Field	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law	Phy. Sci.	Med.	Engin.	None	Total Freshmen
Education	+3,959	+ 324	+121	+328	+ 87	+1,069	+ 71	+251	+ 228	+ 497	+983	12,619
Business	- 324	+2,760	+ 12	+ 94	+ 19	+ 266	+ 82	+250	+ 224	+1,360	+777	5,763
Social Sciences	- 121	- 12	+609	+ 58	+ 27	+ 96	+ 28	+118	+ 118	+ 140	+157	1,135
Humanities	- 328	- 94	- 58	+349	+ 13	+ 172	+ 52	+103	+ 107	+ 111	+271	2,953
Biological Sciences . .	- 87	- 19	- 27	- 13	+248	+ 101	- 7	+ 80	+ 145	+ 29	+ 46	833
Other Professions . . .	-1,069	- 266	- 96	-172	-101	- 486	+ 29	+135	+ 228	+ 346	+480	5,411
Law	- 71	- 82	- 28	- 52	+ 7	- 29	+266	+ 72	+ 136	+ 235	+ 78	1,708
Physical Sciences . . .	- 251	- 250	-118	-103	- 80	- 135	- 72	-414	+ 27	+ 449	+119	3,231
Medicine	- 228	- 224	-118	-107	-145	- 228	-136	- 27	-1,130	+ 50	+ 33	2,643
Engineering	- 497	-1,360	-140	-111	- 29	- 346	-235	-449	- 50	-3,038	+179	7,398

Cell entry = X - y

Freshman	Senior	
row occ	column occ	y
column occ	row occ	X

→ Net Turnover

N, Senior Career = ... 49,817
NA, NEC, Freshman Career 2,834
NA, NEC, Senior Career 3,560
NA, NEC, Both 453

Total Weighted N = ... 56,664

Shaded cell indicates row occupation had Net Loss to column occupation:

Diagonal = Net Change for the occupation vis-a-vis all others.

TABLE 3.9

CAREER FIELD TURNOVER

a) Frequencies

Freshman	Senior											Total
	NEC NA	Other Profs.	Phy. Sci.	Engin.	Med.	Bio. Sci.	Educ.	Soc. Sci.	Hum.	Bus.	Law	
NA, NEC . .	453	340	104	137	22	50	877	155	227	767	155	3,287
None . . .	1,261	480	119	179	33	46	983	157	271	777	78	4,384
Other Profs.	483	4,821	87	79	63	192	1,720	257	453	601	138	8,894
Phy. Sci. .	141	222	1,637	141	88	108	361	134	147	309	84	3,372
Engin. . .	356	425	590	3,798	87	51	546	148	123	1,391	239	7,754
Med. . . .	75	291	115	37	1,150	176	233	123	130	240	148	2,718
Bio. Sci. .	44	91	28	22	31	347	193	33	40	37	11	877
Educ. . . .	564	651	110	49	5	106	10,697	141	406	401	53	13,183
Soc. Sci. .	82	161	16	8	5	6	262	406	88	137	46	1,217
Hum. . . .	181	281	44	12	23	27	734	146	1,468	183	35	3,134
Bus. . . .	281	335	59	31	16	18	725	125	89	4,185	180	6,044
Law	92	167	12	4	12	4	124	74	87	267	962	1,800
Total	4,013	8,265	2,921	4,497	1,535	1,131	17,455	1,899	3,529	9,290	2,129	56,664

TABLE 3.9--Continued

b) Net Career Field Turnover as Per cent of Original Entrants

Field	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law	Phy. Sci.	Med.	Engin.	None	Fresh. Total
Educ. .	+31.4	+ 2.6	+ 1.0	+ 2.6	+ 0.7	+ 8.5	+ 0.6	+ 2.0	+ 1.8	+ 3.9	+ 7.8	12,619
Bus. .	- 5.6	+47.9	+ 0.2	+ 1.6	+ 0.3	+ 4.6	+ 1.4	+ 4.3	+ 3.9	+23.6	+13.5	5,763
Soc. Sci.	-10.7	- 1.1	+53.7	+ 5.1	+ 2.4	+ 8.5	+ 2.5	+10.4	+10.4	+12.3	+13.8	1,135
Hum. . .	-11.1	- 3.2	- 2.0	+11.8	+ 0.4	+ 5.8	+ 1.8	+ 3.5	+ 3.6	+ 3.8	+ 9.2	2,953
Bio. Sci.	-10.4	- 2.3	- 3.2	- 1.6	+29.8	+12.1	- 0.8	+ 9.6	+17.4	+ 3.5	+ 5.5	833
Other Profs.	-12.7	- 3.2	- 1.1	- 2.0	- 1.2	- 5.8	+ 0.3	+ 1.6	+ 2.7	+ 4.1	+ 5.7	8,411
Law . .	- 4.2	- 4.8	- 1.6	- 3.0	+ 0.4	- 1.7	+15.6	+ 4.2	+ 8.0	+13.8	+ 4.6	1,708
Phy. Sci.	- 7.8	- 7.7	- 3.7	- 3.2	- 2.5	- 4.2	- 2.2	-12.8	+ 0.8	+13.9	+ 3.7	3,231
Med. . .	- 8.6	- 8.5	- 4.5	- 4.0	- 5.5	- 8.6	- 5.1	- 1.0	-42.8	+ 1.9	+ 1.2	2,643
Engin. .	- 6.7	-18.4	- 1.9	- 1.5	- 0.4	- 4.7	- 3.2	- 6.1	- 0.7	-41.1	+ 2.4	7,398

N, Senior Career = ... 49,817
NA, NRC Freshman Career 2,834
NA, NRC Senior Career 3,560
NA, Both 453

Total Weighted N = ... 56,664

349 case net increase in Humanities is equal to 11.8 per cent of the original freshman in Humanities; the -11.1 in the left hand cell of the Humanities row means that the net loss of 328 cases from Humanities to Education amounts to 11.1 per cent of the students originally choosing Humanities.

The table can be used to summarize the flow in-and-out of the specific fields, as follows:

Education, which increases 31.4 per cent recruits broadly from all of the other fields. The largest contributor, Other Professions, provides an 8.5 per cent increase, Nones produce a 7.8 per cent increase, and the remainder is scattered, substantiating our impression that Education recruits heavily from every other freshman field.

Business, although showing a loss to Education equal to 5.6 per cent of the freshmen, shows an over-all increase vis-a-vis all other fields. In particular, gains from Engineering amount to almost a quarter (23.6 per cent) of the original freshmen choosing Business, and original Nones account for an increase of 13.5 per cent. The remaining fields all contribute to the growth of Business, but each contributes less than five per cent net change.

Social Sciences increase 53.7 per cent, drawing rather heavily from those with no freshman preference, who amount to a 13.8 per cent increase. Ex-Physical Scientists (10.4 per cent) future Physicians (10.4 per cent) and Engineers (12.3) are the other fields contributing substantially to the growth of Social Sciences. A loss to Education amounting to 10.7 per cent of the original freshmen and a very small loss to Business (1.1 per cent) offset these increases.

Humanities and Fine Arts increase by 11.8 per cent, but the change stems from small increases, none amounting to over 10 per cent of the freshman Humanities vis-a-vis Other Professions, Law, Physical Sciences, Medicine, Engineering, and None, as well as an 11.1 per cent loss to Education and small losses to Business and Social Sciences.

Biological Sciences, which increase 29,8 per cent over-all, draw fairly heavily on Medicine, net gains from Medicine amounting to 17.4 percent of the original Biological Sciences group. Other Professions (possibly health fields in particular) produce a 12.1 per cent increase, while there is a 10.4 per cent loss to Education.

Other Professions, a highly heterogeneous grouping, show a very scattered pattern. Except for a net loss to Education amounting to 12.7 of the freshmen in these professions, and a 5.7 per cent net gain from Nones, all other differentials amount to less than five per cent of the freshman base.

Law, while showing a 15.6 per cent increase over-all, owes most of this to Engineering. Net increase in lawyers from ex-Engineers amounts to 13.8 per cent of the original Law group. Other gains each amounting to less than 10 per cent of the freshman base from Medicine, Physical Sciences, Biological Sciences and None, would otherwise be cancelled out by small losses to Education, Business, Social Sciences, Humanities and Other Professions (each less than five per cent of the freshman base).

Physical Sciences are, as seen above, fairly heavy losers, net defections to Education, Business, Social Sciences, Humanities, Biological Sciences, Other Professions, and Law, each amounting to between 2.2 and 7.8 per cent of the original freshmen in Physical Sciences. The over-all net loss of 12.8 per cent, however, conceals the fact that Physical Sciences net recruits from Engineering amounting to 13.9 per cent of the freshman base, and also make small "profits" from Medicine and necessarily so from Nones.

Medicine, too, suffers considerable attrition. Although no single loss amounts to more than 8.6 per cent of the original pre-Med group, losses to Education, Business, Social Sciences, Humanities, Biological Sciences, Other Professions, Law, and Physical Sciences are hardly compensated for by the slight gains of 1,9 per cent from Engineering and recruits from original Nones, who amount to 1.2 per cent of the freshman base. The end result is a 42.8 per cent proportional decline in future physicians.

Engineering is, as discussed previously, the occupational preference showing the sharpest and most general decline during college. It shows a net loss of 41.1 per cent compared with its freshman year base, the decline being due to an 18.4 per cent net loss to Business, and consistent small losses each amounting to less than seven per cent of the freshman base to the remaining fields. The small increase due to choice of Engineering by original Nones is equivalent to only 2.4 per cent of the freshman Engineering group.

All the findings considered so far were produced from a simple cross-tabulation of freshman year career preference by future career plans (Table 3.4). Although the table is simple, the number of fields and the intrinsic complexities of processes through time justify a review of the major findings before a discussion of their implications. So far, the major results seem to be as follows:

1) Approximately one-half of the graduating seniors report either a shift in career plans between major occupational groups or the development of specific career intentions from a freshman "no preference."

2) In terms of losses, the fields vary from a 15 per cent defection rate among freshmen who chose Education to a 64 per cent loss among freshmen who chose a Social Science field.

3) In terms of gains, there is also considerable variation from the 16 per cent of the non-Educators who switched to Education by graduation to the one per cent of non-Physicians who switched into Medicine.

4) During the four years, Education, Business, Social Sciences, Humanities, Law and Biological Sciences gain more recruits than they lose and increase in size. Conversely, Physical Sciences, Other Professions, Medicine, and Engineering decline in preference during college.

5) Considering the balance of recruitment and attrition, the occupations seem to fall into three groups: a) Gainers: Business and Education, the two fields with low losses, high gains,

and net increases, b) Losers: Medicine, Engineering, Physical Sciences, and Other Professions, the fields with high loss rates and recruitment rates insufficient to prevent a decline, c) Traders: Social Sciences, Biological Sciences, Law, and Humanities, the fields with high loss rates but recruitment rates which more than offset the defections.

6) When net gains and losses between specific pairs of fields are examined a ranking appears (Education, Business, Social Sciences, Humanities, Biological Sciences, Other Professions, Law, Physical Sciences, Medicine, and Engineering) such that fields which precede another in the list show net gains in the exchange of students with each subsequent field.

7) The existence of this pattern is interpreted as meaning that the rates of increase and decrease are general properties of the fields and not due to heavy losses to or gains from particular "rivals." Thus, for example, the decline in Medicine cannot be explained solely through the net loss of students to Physical Sciences, as Medicine also shows net losses to every other field except Engineering.

Such complex findings are subject to a wide variety of interpretations, which either minimize or maximize the significance of the trends.

It is possible to maintain that the data imply the effect of college experience to be amazingly small. Although particular individuals, and a large number of them, move around the pigeon holes of the occupational categories during college, there is not much change in the distribution of fields during the four years. Even the major trend toward Education results in an eight per cent addition to the per cent of students choosing educational careers, and seven out of the ten fields add or subtract one per cent or fewer of the total students. Although it is necessary to remember that our data refer only to the survivors of undergraduate education, it is fair to conclude that the major outlines of the career plans for future college graduates are given at entrance to college, and that changes during four years of higher education amount to filling in the details.

This general line of interpretation--minimizing the effects of college--has much to recommend it. After all, the college freshman has already completed 12 years of education, has lived about one-fifth of his life span in a family and community environment which influences his plans, and in many cases goes to college precisely to implement a specific vocational choice rather than to choose a vocation.

These reflections probably put the question of the effects of college in a more judicial perspective, but this minimizing interpretation may go too far. While the college years are not the sole determinant of vocational choice, no four years are; for vocational choice is the result of a continuous decision process over decades, and there is no evidence in our data that the college years do not contribute their fair share of influence. Although our guess is that the last two years of high school are the most strategic period of all for vocational choice, college is not without its effects. Half of the students appear to change their minds or reach a decision during college; in Business, Social Sciences, Humanities, Biological Sciences, and Law, a majority of seniors choosing the field did not name it as their freshman preference; proportionally speaking, Education, Business, Social Sciences, Medicine and Engineering increase or decrease by one third or more.

What may be even more important is the directionality of the trends. In a society where science and the professions which apply scientific knowledge to human affairs loom larger and larger as key institutions for the economy, national security and cultural life, the evidence suggests a net trend *away* from these fields during college. While Biological Sciences do show a net gain, if Medicine, Engineering, Physical Sciences and Biological Sciences are treated together as one occupational group, these occupations, which constitute 28.3 per cent of the freshman choices, decline to 19.6 per cent of the senior choices. As our sample projection of the total June, 1961 graduates is 265,000 individuals, the net loss of 8.7 per cent means that the net loss to the scientific fields is around 23,000 students.[4]

Put this way, these figures appear to sound the tocsin of alarm. In an era of concern about science and technology and competition with Soviet Russia (which has not, of course, published data on its net losses during higher education) it is tempting to read these results as an indictment of American higher education. Such a conclusion would be quite unfair. To begin with, a case may be made that all of the occupations which college students enter are of extreme significance to the nation. Since the losses from the scientific area go to Education, Social Sciences, Business administration (and businessmen are coming to make important decisions about science) Government and so on, it would be one-sided to see the trend as entirely alarming. The teacher shortage may be more crucial than the shortage of scientists. Second, rather than suggesting insufficient attention to science, these data can equally be construed as a healthy reaction to overemphasis on these fields. The many humanists who delight in indicting our society for its overemphasis on technology and its underemphasis on high culture, may find some comfort in the fact that more students shift from scientific areas into Humanities and Fine Arts than move the other way. Could it be that the general society and the high schools are putting such heavy emphasis on science and technology that the shifts during college represent a healthy reaction?

What is missing from the evidence, of course, is information on the kinds of people involved. At the core, quality is as important as quantity. If the net changes which have been described amount to a redistribution of the students in a pattern more consistent with their aptitudes and abilities, then the absolute size of the losses and gains means little. If, on the other hand, it can be shown that students are moving from fields where they "should stay" into fields for which they are not particularly suited, then it is clear that the findings are suggestive of need for reform.

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[4] Since June graduates are estimated to constitute about three-quarters of all 1961 bachelor's degree, if the same trends apply to mid-year graduates, the total loss is still greater.

Rather than drawing any final evaluations, let us move on to the crucial question of the personal characteristics associated with particular patterns of choice and stability.

II. Factors Associated with Change and Stability

What are the factors associated with change and stability? Are the defectors from science as high in academic performance as those who stay? Are students from lower status origins shifting out of careers which require lengthy graduate study? Are all the trends noted above simply a product of the migration of women into Education? Can the shifts be interpreted as an attempt to find work which is congruent with students' occupational values and interests? We shall provide answers to each of these questions, but as before, it is necessary to preface the report with a brief consideration of the statistical tools because they provide the language for asking and answering these questions.

Let us consider what happens in our four-celled turnover table when a personal characteristic (assumed to be constant over the time period for each person) is involved. For an example, we will re-examine the turnover in Education, now taking into consideration the student's sex. The result is two separate tables.

Men

	Senior	
	Educ.	Other
Freshman Educ.	2,630	787
Other	1,883	22,134

Women

	Senior	
	Educ.	Other
Freshman Educ.	7,890	1,087
Other	2,946	6,611

As a first step, let us examine the transition probabilities for men and women separately.

Transition Probabilities

Initial State	Men	Women	Total
Education	.230 (3,417)	.121 (8,977)	.151 (12,394)
Other	.078 (24,017)	.308 (9,557)	.144 (33,574)

There is a distinct difference. Men are more likely than women to defect from Education (.230 versus .121) and less likely than women to be recruited to Education (.078 v. .308). While our interest here is in methodology not substance, the reader should note that the table tells us that 31 per cent of the women in other fields as freshmen had shifted into Education by their senior year, one of the key trends in the entire set of data.

A more succinct summary of the same trends may be obtained by calculating two Q coefficients: 1) the association between sex and remaining in Education among freshmen choosing Education, and 2) the association between sex and recruitment to Education among those freshmen not choosing Education. The first we shall call "Q Retention," the second "Q Recruitment."

Q's Sex (Male) and Education

	Q	N
Retention	- .369	12,396
Recruitment	- .680	33,574

Both coefficients are negative, which restates the conclusion that among freshmen choosing Education, being a male is negatively associated with remaining in the field; and among freshmen not in Education, being a male is negatively associated with recruitment to the field.

Remembering that net turnover cannot be deduced from the transition probabilities because turnover is influenced heavily by the bases to which the probabilities are applied, it is necessary to develop a scheme for determining how attributes affect change in size. A very simple but rather useful scheme is illustrated as follows:

Turnover Index

Row		Men		Women		Total
A	Total cases	27,434	+	18,534	=	45,968
B	Recruits	1,883	+	2,946	=	4,829
C	Defectors	787	+	1,087	=	1,874
D	Turnover (B-C)	+ 1,096	+	+ 1,859	=	+ 2,955
E	Percentage shift (D/A)	+ 3.996		+10.030		+ 6.428
F	Proportion of Total	.597	+	.403	=	1.000
G	Index (F x E)	+ 2.386	+	4.042	=	6.428

Rows A, B, and C provide the necessary information, and rows D, E, F, and G illustrate the calculations and logic in the Turnover Index. Row A gives the total cases involved, row B gives the number of Recruits (those who shift into the field) and row C gives the number of Defectors (freshmen who leave the field). The analysis then proceeds as follows:

In row D, Defectors are subtracted from Recruits, giving the turnover (net change in cases) for men and for women. Thus, the total increase of 1,874 cases in Education[5] is broken down into net increases of 787 men and 1,859 women.

The remaining steps amount to a procedure for translating these absolute numbers into meaningful percentages.

In row E, the turnover is expressed as the change in percentage of students choosing Education separately for men and women. The justification is as follows: since the turnover (row D) represents the net change in raw numbers, when the turnover is expressed as a percentage of the total cases in question, this represents the increase or decrease in the per cent of the total which are in Education. We see that among men the per cent in Education increases 3.996 and among women the per cent increases 10.030. The increase of 6.428 for the sample as a whole, however, is not the sum of the increases among men and women, simply because there are more men than women among the graduates.

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[5] Numbers in the illustrative data here differ slightly from those presented in the previous section because those with a freshman preference of "None" are excluded in order to facilitate IBM processing of the very complicated data.

In order to get a set of percentages which do add up, in row F the proportion of the sample for men and women is computed, and in row G the percentage shift within a category (from row E) is multiplied by this weight, giving the final results in row G.

Row G can be interpreted as follows: In the sample as a whole there was an increase between freshman year and graduation in the percentage of students choosing Education, the difference between the per cent of freshmen choosing Education and the per cent of seniors choosing it amounting to 6.428. This figure can be broken down into two parts: a) an increase among women, which in itself would have produced a net change of 4.042 per cent, and b) an increase among men, which in itself would have produced a net change of 2.386. Thus, while Education becomes more popular among both men and women, most of the net increase in Education comes from its net increase among women.

We now have two statistical methods for asking questions: the Retention and Recruitment coefficients tell us whether a given characteristic is related to the transition probabilities and the Turnover Index enables us to analyze the over-all shift into a set of discrete trends among different categories of respondents. There is, however, one more question to ask before turning to the substantive findings. Just as a given characteristic affects the turnover, the turnover affects the distribution of that characteristic. We have seen in the example that sex affects the turnover in Education, but this in itself does not show whether the shifts in and out affect the sex composition of the group going into Education. Common sense would tell us that if men tend to leave Education and women tend to enter it, the net result would be for the percentage of women educators to increase. Common sense, once again, is wrong. Education gets more masculine over time! The following table shows the data.

Per cent Male

		Senior		
		Education	Other	Total
Freshman	Education	25 (10,520)	42 (1,874)	28 (12,394)
	Other	39 (4,829)	77 (28,745)	72 (33,574)
	Total	30 (15,349)	75 (30,619)	61 (44,968)

The results at first appear impossible. Although men tend to leave Education and women tend to enter it, after four years Education becomes a little more masculine (30 per cent male at graduation v. 28 per cent at entry) and so do the non-Educational fields; (75 per cent masculine at graduation v. 72 per cent at entry)!

One way of stating the phenomenon is as follows:

Considering the people entering and leaving a given state, if for each defector there is one recruit with identical properties, there will be no change in the distribution of properties within states regardless of the transition rates. What makes a difference is the number and character of the surplus or deficit after subtracting all changes which cancel each other out. In terms of sex and Education, the following data illustrate this point:

Turnover	Men	Women	Total	Per cent Male
Recruits	1,883	2,946	4,829	39
Defectors	787	1,087	1,874	42
Net changers (Recruits minus Defectors)	1,096	1,859	2,955	37

Although a total of 6,703 cases shift in or out of Education, 3,748 of the cases "cancel each other out" in terms of sex, so that the result is equivalent to adding a group of 2,955 cases, which are 37 per cent male, to Education and subtracting 2,955 cases, which are 37 per cent male, from all other fields...with the following results:

	Per cent Male		N
Freshmen choosing Education	28%	of	12,394
+Net Changers	37%	of	2,955
Seniors choosing Education	30%	of	15,349
Freshmen not choosing Education	72%	of	33,574
-Net Changers	37%	of	2,955
Seniors not choosing Education	75%	of	30,619

The paradox is resolved by noting that the net changers have a sex composition intermediate between freshmen choosing Education and freshmen choosing other fields; therefore when they are added to Education, they make it a little more masculine, and when subtracted from other fields, they make them a little more masculine also.

The point is somewhat more than a statistical curiosity because, as suggested above, the qualities of change during college are as important as the quantity. In many ways this phenomenon is akin to "regression" in standard statistical analyses (the mathematical reason why, for instance, the children of geniuses are not, on the average, as bright as their parents).

Certain formal rules may be deduced concerning the situations where this regression effect will occur, but for the moment, the important point is this:

When considering the relationship between a given characteristic and change it is necessary to consider three separate questions:

1) Do the transition probabilities vary with the characteristic?

2) What is the net turnover for students who do and do not possess the characteristic?

3) What is the change, if any, in the distribution of the characteristic within and between fields?

With these questions in mind, let us turn to the actual findings on the relationships between the variables described in Chapter II (sex, API, "People," "Original," "Money," race, SES, hometown, and religion) and the dynamics of occupational choice during college.

As there are eleven attributes (male, high API, high people, high original, high money, Negro, high SES, large city, Protestant, Catholic, and Jewish) and ten fields, we will use our two "Q" coefficients (Q Retention and Q Recruitment) to summarize the results rather than presenting the 110 percentage tables. Table 3.10 summarizes the retention data, and Table 3.11, the recruitment data.

In general, the personal characteristics are related to retention and recruitment. Using the rule of thumb that a "Q" value of .15 is worth noting, we find that the average "Q" for retention is .180 and for recruitment it is .232. There are, of course, many other variables involved in career choice, and in particular, a subsequent chapter will be devoted to college experience and school characteristics as a factor in career decisions, but the suggestion is that the family, community and personal characteristics of the students play a role in the process by which half the students find a new or definite career between entrance to college and graduation.

In a moment we will turn to the results for particular characteristics and then in the next chapter to a detailed

TABLE 3.10

PERSONAL CHARACTERISTICS AND CAREER FIELD TURNOVER

"Q" RETENTION

Variable		Field									
		Phy. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Med.	Law	Engin.	Educ.	Other Prof.	Bus.
Sex:	Male	+.265	-.019	+.239	+.107	+.623	+.599	+.544	-.361	+.056	+.580
API:	High	+.115	+.206	+.336	+.170	+.541	+.126	+.094	+.007	-.054	-.054
Values:	People	-.699	-.691	-.207	-.237	+.253	+.073	-.554	+.241	-.020	-.182
	Original	+.341	+.045	+.160	+.345	-.333	-.278	+.327	+.003	-.160	-.151
	Money	+.034	-.070	-.254	-.156	-.218	+.278	-.020	-.264	-.170	+.490
SES:	High*	-.181	+.065	-.105	+.049	-.015	+.284	-.148	-.084	-.123	+.060
City:	Larger*	+.044	+.039	+.083	+.008	+.169	+.183	+.036	-.034	-.034	+.050
Religion:	Protestant*	+.022	+.115	+.265	+.058	-.251	-.082	+.019	-.007	+.088	-.274
	Catholic*	+.012	-.079	-.187	-.057	+.038	-.114	+.023	+.019	-.044	+.243
	Jewish*	-.086	-.115	-.220	-.025	+.362	+.358	-.126	-.027	-.171	+.180
Race:	Negro	+.032	-.245	-.290	-.570	-.305	+.184	-.043	-.126	+.121	-.052
Average absolute value . . .		.166	.154	.213	.162	.283	.236	.176	.108	.095	.211
Number ≥ |.15|		4	3	9	5	9	7	4	3	3	7

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*Among white Protestants, Catholics, and Jews.

TABLE 3.11

PERSONAL CHARACTERISTICS AND CAREER FIELD TURNOVER
"Q" RECRUITMENT

Variable		Field									
		Phy. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Med.	Law	Engin.	Educ.	Other Prof.	Bus.
Sex:	Male	+.537	-.078	+.183	-.170	+.702	+.825	+.916	-.677	-.007	+.652
API:	High	+.140	-.016	+.297	+.378	+.594	+.074	-.136	-.054	-.150	-.272
Values:	People	-.720	-.622	+.112	-.125	+.278	+.121	-.791	+.420	+.183	-.016
	Original	+.223	+.064	+.205	+.530	-.102	-.139	+.314	-.031	-.149	-.198
	Money	+.220	-.126	-.346	-.342	-.062	+.599	+.355	-.483	-.177	+.572
SES:	High*	-.173	+.068	+.186	+.256	+.486	+.279	-.057	-.091	+.050	+.145
City:	Larger*	+.023	-.107	+.251	+.165	+.118	+.189	-.009	-.192	-.053	+.123
Religion:	Protestant*	+.016	+.066	-.088	-.063	-.162	-.326	+.065	+.108	+.079	-.054
	Catholic*	-.035	-.063	-.074	+.017	-.177	+.167	-.003	-.070	-.040	+.110
	Jewish*	+.036	-.036	+.322	+.125	+.522	+.401	-.196	-.136	-.128	-.129
Race:	Negro	+.034	+.395	+.060	-.093	-.817	-.319	+.312	+.279	+.213	-.638
Average absolute value . . .		.196	.149	.193	.206	.365	.313	.287	.231	.112	.264
Number ≥ |.15|		5	2	7	6	8	8	6	5	5	5

*Among white Protestants, Catholics, and Jews.

consideration of specific occupational fields, but these discussions may be more fruitful when set in the context of the process in general.

The coefficients for recruitment and retention tend to be similar (Table 3.12). If a given characteristic is associated with remaining within a field, it also tends to be associated with entry into that field for students with freshman choices in other fields. Thus, of the 35 recruitment Q's with a positive value of .15 or more, 74 per cent showed a positive retention Q; of the 22 recruitment Q's with a negative value of -.15 or less, 77 per cent of the retention Q's were not positive. Putting it another way, in only three out of the 110 pairs of Q's is one Q greater than +.15 and the other, less than -.15.

The pattern has a positive and a negative implication. Positively speaking, it suggests that the personal characteristics studied tend to be associated with particular fields, both keeping original adherents within the field and drawing new students to the fields. Negatively speaking, none of these factors seems associated with change *per se*. If a given characteristic were negatively associated with retention and positively associated with recruitment, this would mean that students with that characteristic were more likely to change their minds regardless of their initial field. Since none of the items shows this pattern, we can conclude that sex, academic performance, occupational values and the items in the Index of Background Characteristics are not correlated with stability or instability of choice across fields, but rather are associated with gravitational pulls toward or away from particular fields.

The pattern comes into sharper focus when the retention and recruitment coefficients are cross-tabulated against the coefficients for freshman choice (Table 3.13). Again, there is a considerable positive relationship. *Those characteristics which*

TABLE 3.12

PERSONAL CHARACTERISTICS AND CAREER FIELD TURNOVER: DISTRIBUTIVE ASSOCIATION OF "Q" RETENTION WITH "Q" RECRUITMENT

Retention "Qs"	Recruitment "Qs"				
	≥ +.15	+.01 to +.14	.00 to -.14	≤ -.15	Total
≥ +.15	21	2	3	1	27
+.01 to +.14	5	13	10	2	30
.00 to -.14	7	5	8	6	26
≥ -.15	2	2	10	13	27
Total .	35	22	31	22	110
Per cent "+"	74	68	42	23	

TABLE 3.13

PERSONAL CHARACTERISTICS AND CAREER FIELD TURNOVER:
DISTRIBUTIVE ASSOCIATION OF "Q" RETENTION AND
"Q" RECRUITMENT WITH "Q" FRESHMAN CAREER

Freshman Career "Qs"	Retention "Qs"					Freshman Career "Qs"	Recruitment "Qs"				
	≥+.15	+.01 to +.14	.00 to -.14	≤-.15	Total		≥+.15	+.01 to +.14	.00 to -.14	≤-.15	Total
≥+.15	20	8	7	4	39	≥+.15	29	9	1		39
+.01 to -.14	4	11	4	4	23	+.01 to -.14	4	7	9	3	23
.00 to -.14	0	7	6	8	21	.00 to -.14	0	4	13	4	21
≤-.15	3	4	9	11	27	≤-.15	2	2	8	15	27
Total .	27	30	26	27	110	Total .	35	22	31	22	110
Per cent "φ"	89	63	54	30		Per cent "φ"	94	73	32	14	

were associated with a given field among the entering students tend to be the same characteristics which discriminate between Loyalists and Defectors and to be characteristic of Recruits to the field.

The process suggested is the familiar trend toward social homogeneity, the tendency for "birds of a feather to flock together," and (almost) regardless of the personal characteristic or occupational field the tendency is for "deviants" to switch out and students with traits characteristic of the field to switch in.

In capsule: Career decisions in college tend to be in the direction of accentuating the occupational differences already present at the beginning of college.

One might expect that college would have a liberating effect on student choices, that exposure to higher education would deflate stereotypes and free the student from the pressure of family and subgroup, but if so the effect is only one of a slight braking rather than a reversal. Whether or not the relationship is a "nice one," as for example, the tendency of "people-oriented" students to move into the already "people-oriented" occupation of Education, or the "less nice" tendency for students from religious minorities to shift into the occupations overchosen by freshmen from religious minorities, the formal principle is the same.

Two exceptions and a qualification should be noted.

The exceptions all come from one variable and one occupation. If one takes all the deviant cases from the upper right and lower left cells of Tables 3.12 and 3.13, they turn out to be as follows:

Discrepant Cases

Item	Occupation	Freshman	Q	
			Retention	Recruitment
Negro . . .	Bio. Sci.	.361	-.245	.395
Negro . . .	Law	-.306	.184	-.319
Negro . . .	Engineering	-.438	*	.312
Negro . . .	Social Sciences	.327	-.290	*
Male . . .	Social Sciences	-.177	.239	.183
People . .	Social Sciences	.233	-.207	*
Protestant.	Social Sciences	-.158	.265	*
Jewish . .	Social Sciences	.335	-.220	.322

* = $.15 > Q > -.15$

All of the exceptions to our rule involve Negroes, social scientists or both. Negroes tend to overchoose Biological Sciences as freshmen, but also tend to defect from it; to underchoose Law, but to be retained in it; to underchoose Engineering, but to be recruited toward it; and to overchoose Social Science, but to defect from it. The findings on race probably come from the unreliability of the data--there being a weighted total of 47 Negroes initially choosing Biological Sciences, 28 choosing Law, 97 choosing Engineering, and 59 choosing Social Sciences. Except for Engineering, and possibly Social Sciences, we would attribute the discrepant patterns to sampling fluctuations.

The case of Social Sciences, however, appears to be one of a genuine reversal during college. Women and students who want to work with people tend to overchoose Social Sciences as freshmen, but also tend to have high defection rates and lower recruitment rates. It appears to us that many freshmen choose Social Sciences in the belief that they are among the "helping professions," but learn in their courses that these disciplines (save, perhaps for Clinical Psychology) have a distinctly academic and intellectual rather than service flavor. The interpretation is consistent with the finding of other research that Social Science graduate students tend to be recruited to the fields late in their college careers.[6]

If continuity in selection processes is taken as suggestive of low influence of college on career choice, discontinuity is suggestive of the opposite, and in the case of the Social Sciences, there is indirect evidence that college experience does influence the choice, since during college there is a reversal in the kind of student who aims for a career in the Social Sciences.

Having reviewed the process in very general terms, let us now examine the specific trends for the various background characteristics in the study.

Sex

Seven of the ten fields show distinct sex differences in career changes (Table 3.14). At the beginning of college there is already considerable differentiation, Education being a conspicuously feminine field (Q = -.730) along with Humanities and Fine Arts (Q = -.438), the Other Professions, Biological Sciences and Social Sciences being moderately feminine (Q's range from -.177 to -.246), and the remaining fields (Physical Sciences, Business, Medicine, and Law) are conspicuously masculine (Q's range from .301 to .977).

During the college years, in each of the fields which was distinctly masculine initially, women tend to leave and men tend to enter, as shown by the positive Q values for retention and recruitment in Table 3.14. At the opposite end of the spectrum, the direction reverses for Education, where (as noted in the example above) men tend to defect and women to be recruited. Humanities also show a feminine trend, although only for recruitment is the coefficient greater than .15. Finally,

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[6] James A. Davis, Stipends and Spouses, (University of Chicago Press, 1962), p. 168.

TABLE 3.14

CAREER FIELD TURNOVER AND SEX

("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent Male	Per cent Male Seniors
Engineering . .	+.977	+.544	+.916	+.979	0	99
Law	+.730	+.599	+.825	+.846	+ 4	94
Medicine . . .	+.508	+.623	+.702	+.761	+10	91
Business . . .	+.521	+.580	+.652	+.673	+ 5	86
Phy. Sciences .	+.301	+.265	+.537	+.470	+ 7	79
Soc. Sciences .	-.177	+.239	+.183	*	+15	66
Bio. Sciences .	-.190	*	*	*	+ 4	54
Other. Profs. .	-.246	*	*	*	+ 5	54
Humanities . .	-.438	*	-.170	-.266	+ 9	47
Education . . .	-.730	-.361	-.677	-.749	+ 2	30

* = +.15 > Q > -.15

Social Sciences, as also noted above, shifts from the least feminine of the initially feminine, so that at the end of four years it has about the same sex composition as students in general.

What is the final result?

While the coefficients clearly indicate that masculine fields pull men and feminine fields draw women, the preceding technical discussions have prepared us for the fact that the final outcome is not necessarily increased homogeneity.

With one slight reversal (Business and Medicine) the fields maintain their rank order in terms of per cent male, but each becomes a little more masculine, except for Engineering which remains 99 per cent male. This "net masculinity" is indicated both by the increase in the per cent male within each field, and also by the increase in the "Q" coefficients for senior as opposed to freshman choice. Thus, while Social Sciences, Biological Sciences and Other Professions were distinctly feminine at the beginning of college, at graduation they have about the same sex ratio as students in general. Similarly, the originally positive Q values for Law, Medicine, Business and Physical Sciences rise considerably.

Our impression is that the field of Education is the source of this peculiar situation. Education has been shown to be a large field, one which is disproportionately feminine, and one which gains considerably over the four years. The net effects of its strong gravitational pull seem to be these: a) It would appear that Education attracts relatively more women than men from every other field, making the remaining Loyalists more masculine in composition; b) At the same time, Education was so feminine to begin with that its recruits, while more female than other students, are less female than original educators. The final result is a "masculinizing" of every field!

Academic Performance

The trends for academic performance are of high significance, for while the measure is a crude one, the dimension it taps--general intellectual performance--is one of great concern for the professions. An increase or decrease in size for a given field needs to be interpreted in very different ways, depending on whether the proportion of high academic performers is affected.

Table 3.15 summarizes the data on API.

Initially the fields are differentiated in terms of academic potential. Medicine, Humanities, Social Sciences, Physical Sciences, and Law have freshmen destined to do better than the average student, and freshmen choosing Business are destined to lesser academic success than the average.

The changes in career choice during college tend to reinforce these tendencies, but in such a way that "the rich get richer," but the poor do not get poorer. Medicine, Humanities, and Social Sciences show a definite API factor in recruitment and retention. In each, brighter students tend to remain and to be recruited into the field (Q's range from .170 to .594). The opposite does not seem to hold, however, as there is no field in which retention is negatively related to API, although for Business and Other Professions recruitment is associated with lower academic performance.

While it may be damning with faint praise, it is necessary to call particular attention to the negative findings for Education and Engineering. Despite certain prevalent myths, our data show that in neither field is academic performance associated with career changes, and neither field at graduation is appreciably higher or lower in academic performance than students in general.

Turning to the final outcome the result seems to be a considerable increase in the academic caliber of future

TABLE 3.15

CAREER FIELD TURNOVER AND ACADEMIC PERFORMANCE INDEX

("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent High A.P.I.	Per cent High A.P.I. Senior
Medicine . .	+.245	+.541	+.594	+.565	+14	82
Humanities .	+.234	+.170	+.378	+.349	+ 5	72
Soc. Sci. .	+.278	+.336	+.297	+.342	+ 2	72
Phy. Sci. .	+.257	*	*	+.237	- 1	67
Law	+.180	*	*	+.154	- 1	64
Bio. Sci. .	*	+.206	*	*	- 1	59
Education .	*	*	*	*	0	55
Engineering.	*	*	*	*	+ 2	54
Other Profs.	*	*	-.150	*	- 2	53
Business .	-.233	*	-.272	-.262	0	46

* = +.15 > Q > -.15

physicians, a slight increase in the academic caliber of future Humanists, and little change in the other fields. In terms of the rank order, except for ranks 1-2-3, the order remains unchanged. At the head of the line, however, a difference develops. While initially Medicine, Humanities and Social Sciences were within three per cent of each other in terms of high API proportions, Medicine pulls away from the other front runners and at the time of graduation has a ten per cent differential over Humanities and Social Sciences.

Thus, the outstanding trend in API is the quality increase in Medicine, which as a freshman field has 68 per cent high API, but as a senior field has 82 per cent, the highest concentration of better students of any field. Medicine, of course, pays a price, which is shrinkage. Since Medicine declines considerably in size during the four years of college, the result amounts to a purging of weaker students rather than the attraction of better students. As Medicine was a relatively small field to begin with, its discards are scattered over all the remaining fields and, since its discards are fairly good students, there is no concomitant lowering of the API levels of other fields.

While the API change in Medicine is a striking one, the most interesting findings in Table 3.15 may be the negative ones, for except for physicians, the other occupational fields end up with just about the same share of the better talent as they had at freshman registration, despite the considerable fluctuations in size. Thus, the swelling of Education and Biological Sciences is not at the price of dilution of their scholarly talent, and the shrinkage of Engineering and Physical Sciences is not compensated for by improvement in over-all academic caliber.

None of this is to say that grades in particular courses are not very important for career decisions (this question will be considered later in the analysis) or that cumulative grade point averages in X field are exactly equivalent to those in

Y field. What it does say, we think, is that while entry into college and graduation from college do indeed act as filters which change the over-all intellectual caliber of the stream of young people flowing into occupations, within the group completing college, gross academic differentials play little role in the sorting process (except for Medicine). It is true that 59 per cent of the seniors entering Biological Sciences are high on API, in comparison with 46 per cent of the businessmen and 67 per cent of the Physical Scientists--but this is a difference which comes from pre-college decisions, not from switches during the college years.

The results for sex and academic performance may be summarized by a graph using the coefficients for freshman career choice (Table 3.3) and senior career choice (Table 3.16). In Table 3.17 the fields are classified by their freshman differentiation in terms of sex and API potential. Five fields are high on API, three disproportionately male (Law, Medicine, Physical Sciences) and two relatively female (Humanities and Social Sciences). Four fields are neither high nor low on API, one masculine (Engineering), and three feminine (Biological Sciences, Other Professions and Education); and one field is masculine and associated with low API (Business).

After four years of college, the API differences remain the same, since the trends were toward accentuation of existing differences, not reversals. Three fields, however, move from relatively feminine to neither feminine nor masculine (Social Sciences, Biological Sciences and Other Professions).

The result is a distribution of the fields over seven of the nine cells of the table, in such a way that in each sex category there is variation by API; and in high and neither high nor low API there is considerable sex differentiation.

TABLE 3.16

PERSONAL CHARACTERISTICS AND CAREER FIELD TURNOVER

"Q" Senior

Variable		Field									
		Phy. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Med.	Law	Engin.	Educ.	Other Profs.	Bus.
Sex:	Male	+.470	-.119	+.135	-.266	+.761	+.846	+.979	-.749	-.124	+.673
API:	High	+.237	+.050	+.342	+.349	+.565	+.154	-.055	-.053	-.098	-.262
Values:	People	-.757	-.673	+.106	-.149	+.249	+.115	-.741	+.468	+.160	-.041
	Original	+.341	+.078	+.197	+.565	-.206	-.179	+.311	-.053	-.167	-.277
	Money	+.163	-.154	-.321	-.338	-.089	+.558	+.300	-.517	-.257	+.574
SES:	High*	-.113	+.085	+.175	+.235	+.382	+.408	-.177	-.165	-.021	+.077
City:	Larger*	+.125	-.050	+.274	+.114	+.257	+.262	+.059	-.231	-.111	+.140
Religion:	Protestant* . . .	-.084	+.029	-.060	-.019	-.315	-.377	+.030	+.148	+.168	-.145
	Catholic*	+.083	-.033	-.087	-.012	+.017	+.203	+.027	-.113	-.110	+.173
	Jewish*	+.033	-.003	+.288	+.076	+.538	+.431	-.165	-.149	-.225	-.023
Race:	Negro	-.144	+.341	+.068	-.291	-.237	-.274	-.294	+.239	+.251	-.516

*Among white Protestants, Catholics, and Jews.

TABLE 3.17

CAREER FIELD: TRENDS IN SEX AND ACADEMIC PERFORMANCE

A.P.I.	Male	Neither	Female
High	Law Medicine Physical Science	 ←	Humanities Social Sciences
Neither	Engineering	← ←	Bio. Sciences Other Professions Education
Low	Business		

Cell entry = location according to Freshman Q

If arrow, Tip = location according to Senior Q

Male and High = Q > +.15

Neither = +.15 > Q > -.15

Female and Low = Q < -.15

Masculine Fields

High API: Law, Medicine, Physical Science

Neither High nor Low: Engineering

Low API: Business

Neither Masculine nor Feminine

High API: Social Sciences

Neither High nor Low: Biological Sciences, Other Professions

Feminine Fields

High API: Humanities and Fine Arts

Neither High nor Low: Education

Let us now consider the dynamics of change on other dimensions.

Occupational Values

The idea that occupational choices are made in such a way as to increase the fit between a person's values and the values which can be maximized by the job is one of the central ideas of research on occupational choice, and provides the major theme of the important work done by Strong, Rosenberg, Roe and others.[7] In this survey, as elsewhere, one of the major trends is toward consonance between values and occupational choice.

Of all the personal characteristics used, the three value questions (referring to working with people, being original and creative, and making money) are undoubtedly the least stable over time, although other research studies show them to be remarkably stable in comparison with other psychological phenomena. Students do not change their sexes or parental-family SES during college, but they undoubtedly do change their values. Nevertheless, we shall proceed as if the values were constant through college, a decision which may be justified since for the prime question at hand--which values go with which occupations--the question of constancy doesn't make much difference.

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[7] Cf. E. K. Strong, Vocational Interests of Men and Women (Stanford University Press, 1943), Morris Rosenberg, Occupations and Values (Free Press, 1957), Anne Roe, The Psychology of Occupations (Wiley, 1957).

Table 3.18 a) summarizes the data on "Opportunities to work with people rather than things." The general trend is for the people-oriented fields (hardly surprisingly) to attract people-oriented people, and for scientific and technological fields to be abandoned by those who are people-oriented. Thus, although freshmen choosing Biological Sciences, Engineering and Physical Sciences were already quite unlikely to endorse this value (Q's range from -.433 to -.552) endorsement of the value is strongly associated with defection from these fields and is negatively associated with recruitment. The net effect is a fairly conspicuous drop in the percentage of students who are people-oriented in these fields, Physical Science, for example, drops from 31 per cent to 16 per cent endorsing the item.

At the other extreme, primary and secondary Education is (again hardly unexpectedly) *the* people-oriented occupation. Among freshmen the Q for "People" and Education is .432; for Retention it is .241 and for Recruitment it is .420.

The striking difference in people-orientation between the two extremes is shown below:

Per cent Circling "People"

		Senior	
		Education	Engineering, Biological Sciences, Physical Sciences
Freshman	Education	72.4% (10,520)	31.4% (258)
	Engineering, Physical Sciences, Biological Sci.	58.0 (1,075)	15.9 (6,632)

TABLE 3.18

CAREER FIELD TURNOVER AND VALUES

a) "Q" "People"

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent +	Per cent + Senior
Education . .	+.432	+.241	+.420	+.468	0	71
Medicine . .	*	+.253	+.278	+.249	+ 8	67
Other Profs..	+.169	*	+.183	+.160	- 1	61
Law	*	*	*	*	+ 2	60
Soc. Sci. . .	+.233	-.207	*	*	- 6	60
Business . .	*	-.182	*	*	- 2	53
Humanities .	*	-.237	*	-.149	- 5	48
Bio. Sci. . .	-.433	-.691	-.622	-.673	-13	20
Engineering .	-.552	-.554	-.791	-.741	-13	17
Phy. Sci. . .	-.491	-.699	-.720	-.757	-15	16

* = +.15 > Q > -.15

TABLE 3.18--Continued

b) "Q" "Original"

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent +	Per cent + Senior
Humanities .	+.467	+.345	+.530	+.565	+ 5	78
Phy. Sci. .	+.255	+.341	+.223	+.341	+ 4	67
Engineering.	+.146	+.327	+.314	+.311	+ 8	65
Soc. Sci. .	*	+.160	+.205	+.197	+ 6	61
Bio. Sci. .	*	*	*	*	0	55
Education .	*	*	*	*	+ 1	50
Other Profs.	*	-.160	-.149	-.167	- 3	44
Law	*	-.278	*	-.179	- 4	43
Medicine . .	*	-.333	*	-.206	- 8	41
Business .	-.304	-.151	-.198	-.277	+ 2	40

* = +.15 > Q > -.15

TABLE 3.18--Continued

c) "Q" "Money"

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent +	Per cent + Senior
Business . . .	+.430	+.490	+.572	+.574	+ 6	46
Law	+.416	+.278	+.599	+.558	+ 9	51
Engineering .	+.335	*	+.355	+.300	0	35
Phy. Sci. . .	*	*	+.220	+.163	+ 3	30
Medicine . . .	*	-.218	*	*	- 4	21
Bio. Sci. . .	-.174	*	*	-.154	+ 1	19
Other Profs. .	-.242	-.170	-.177	-.257	- 1	16
Soc. Sci. . .	*	-.254	-.346	-.321	- 7	14
Humanities . .	-.259	-.156	-.342	-.338	- 2	14
Education . .	-.472	-.264	-.483	-.517	0	12

* = +.15 > Q > -.15

Nevertheless, it must be noted that this single item does not in itself explain the flow between scientific fields and Education, because even among "thing"-oriented students more students move from Engineering, Biological Sciences and Physical Sciences to Education than vice versa.

While the cases of Education, Engineering, Biological Sciences, and Physical Sciences neatly illustrate the generalization that changes during college accentuate the initial differences between fields, there are enough exceptions in the case of "people" to merit attention. Because in Tables 3.14, 3.15, 3.18, 3.20, 3.21, 3.22 and 3.23 the fields are ordered in terms of the senior Q's between the item and field, if the process is one of continuous differentiation, the order of freshman Q's in the tables should be similar to the order of fields. This was the case in the tables for sex and API. For "people," however, there are three interesting exceptions:

1) As noted previously, Social Sciences, while increasingly popular over the four years, become less people-oriented. In terms of freshman choice, Social Sciences are second only to Education (Q = .233), but because people-oriented students tend to defect, by graduation the Social Sciences are no longer appreciably different from students in general in the per cent endorsing this value.

2) A similar, but less strong tendency, seems to hold for the Humanities. Initially, students in the Humanities are about like students in general, but orientation toward people is associated with defections from Humanities (Q = -.237) and at graduation those in Humanities and Fine Arts are appreciably less people-oriented than students in general (Q = -.149).

3) The reverse seems to obtain for Medicine. Freshmen choosing Medicine are neither people nor thing-oriented in comparison with the general run of future graduates, but people-orientation is associated with retention in Medicine (Q = .253) and with

recruitment of students into Medicine (Q = .278). The effect of these changes is that at graduation time, the per cent of aspiring physicians who are people-oriented has increased from 59 to 67, and seniors aiming for Medicine are appreciably more people-oriented (Q = .249) than students in general.

If one thinks of the people-oriented students as oriented toward service professions, what seems to happen during college is that the minority of service-oriented students in science and technology tend to leave; the considerable portion of service-oriented students in Social Sciences and Humanities learn that these fields are cerebral rather than service in nature and tend to leave; while Education, Medicine, and Other professions tend to recruit the people-oriented changers.

The value "Opportunities to be original and creative," was shown in Chapter II to be associated with the values "Living and working in the world of ideas" (Q = .68) and "Freedom from supervision in my work" (Q = .36), and was more often endorsed by students high on academic performance. It thus can be considered as an index of interest in intellectual activities.[8]

Table 3.18 b) shows the data on the relationship between this value and occupational choice. The pattern is one of continued differentiation of the fields. During the freshman period this value is associated with choice of Humanities (Q = .467), Physical Sciences (Q = .255) and Engineering (Q = .146), and in each of these both retention and recruitment are associated with endorsement of the value (Q's vary from .205 to .530). Social Sciences, while not initially high on this item tend to retain and recruit students who endorse it (Q for Retention = .160, for Recruitment .205) and at graduation choice of Social Sciences is positively related to this value (Q = .197).

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[8] Whether or not such students are really original and creative is not to be assumed, as we are dealing with motives not capacities.

At the bottom of Table 3.18 b) it is seen that the initial negative relationship between originality and Business (Q = -.304) is followed by a loss of originals (Q Retention = -.151) and recruitment of non-originals (Q Recruitment = -.198).

Although the remaining fields are not initially differentiated on this item, the Other Professions, Law, and Medicine all show a loss of students valuing this occupational trait (Q's for retention range from -.160 to -.333), so that at graduation the Other Professions, Law and Medicine, as well as Business have appreciably fewer students endorsing originality than the student body in general.

In general, then, just as people-oriented students flowed from the arts and science fields into the service professions, there is a flow of intellectual and self-expressive students from the professions into the scientific and liberal arts fields. The relationships are not a pure inverse, however, for it is noted that students in Education are neither high nor low on this value, and Biological Sciences constitute a scientific field which is no different from students in general in choice of this item.

The percentage change data substantiate this interpretation, the per cent endorsing the item rising four to eight percentage points in Humanities, Physical Sciences, Engineering, and Social Sciences, and the percentages declining three to eight points in Other Professions, Law and Medicine. The two per cent rise in original and creative among businessmen is a regression effect akin to the masculine trend in Education.

The third value item "making a lot of money," shows the now-familiar continuity pattern, along with the now-familiar exception of Social Sciences [Table 3.18 c)].

Business and Law comprise the pecuniary extreme, endorsement of the money item being positively associated with freshman choice, retention, and recruitment. Engineering and Physical Sciences, the masculine scientific fields, also tend in this direction, Engineering showing a positive freshman association (Q = .335) and a positive relationship with recruitment (Q = .355) although money does not have an important association with retention in Engineering. Although initially Physical Sciences choosers were not particularly money-oriented, recruitment to Physical Sciences is associated with this item (Q = .220), so that at graduation the physical scientist is somewhat more oriented to money (Q = .163) than the general run of students.

The same picture in reverse develops at the non-money-oriented end of the continuum. The least money-oriented fields at entry to college, Education, Humanities and Other Professions show a defection of money-oriented students and a recruitment of non-money-oriented students. Social Scientists end up as low in interest in money (Q = -.321 for senior choice) but as we have seen repeatedly, this trait develops through choices during college. At entrance, those who choose Social Sciences are neither high nor low on this value, but money-making is negatively related to retention (Q = -.254) and recruitment (Q = -.346), so their aversion to gain as a group is a college-age development.

While Business, Law, and Engineering can be classified as consistently money-oriented, Physical Sciences as developing a pecuniary orientation, Education, Humanities, and Other Professions as consistently non-money-oriented, and Social Sciences as developing an anti-money trend, neither Medicine nor Biological Sciences show any definite pattern. Biological scientists tend to be less interested in money in terms of freshman choice (Q = -.174) and senior choice (Q = -.154), this values does not have a noteworthy[9] relationship with either retention or recruitment into this field. Although interest in money making is related to defection from Medicine (Q = -.218) this value shows no other association with Medicine. Thus, oddly, interest in making money is neither positively nor negatively related with recruitment to the highest paying occupation in the history of man--modern American Medicine.

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[9] The reader will remember that we have decided arbitrarily to ignore Q's with absolute values of less than .15, and consider as "interesting," "noteworthy," etc., all others. Because of the large sample, of course, many Q's less than .15 are statistically significant.

Table 3.19 summarizes the trends for the three values in the same fashion that Table 3.17 summarizes the results for sex and API.

Considering all three values simultaneously, four fields remain unchanged from freshman to senior (Engineering, Biological Sciences, Business, and Education); three fields shift in terms of a single value (Physical Sciences, Humanities, Other Professions); and the rest shift on two or three values (Medicine, Social Sciences, Law).

Although three independent dimensions cannot be collapsed into two without some distortion, it is possible to use a "circle" to describe the trends [Tables 3.19 c) and 3.19 d)]. By setting three equidistant points on the circumference of the circle for people, original, and money, and then choosing points equidistant between the pairs for combinations of values (people and money, original and money, people and original) we can locate all of our values (except for Biological Sciences) in the resulting "clock face." Biological Sciences are "low" on all three values for both freshman and senior choice, and thus cannot be represented on the clock.

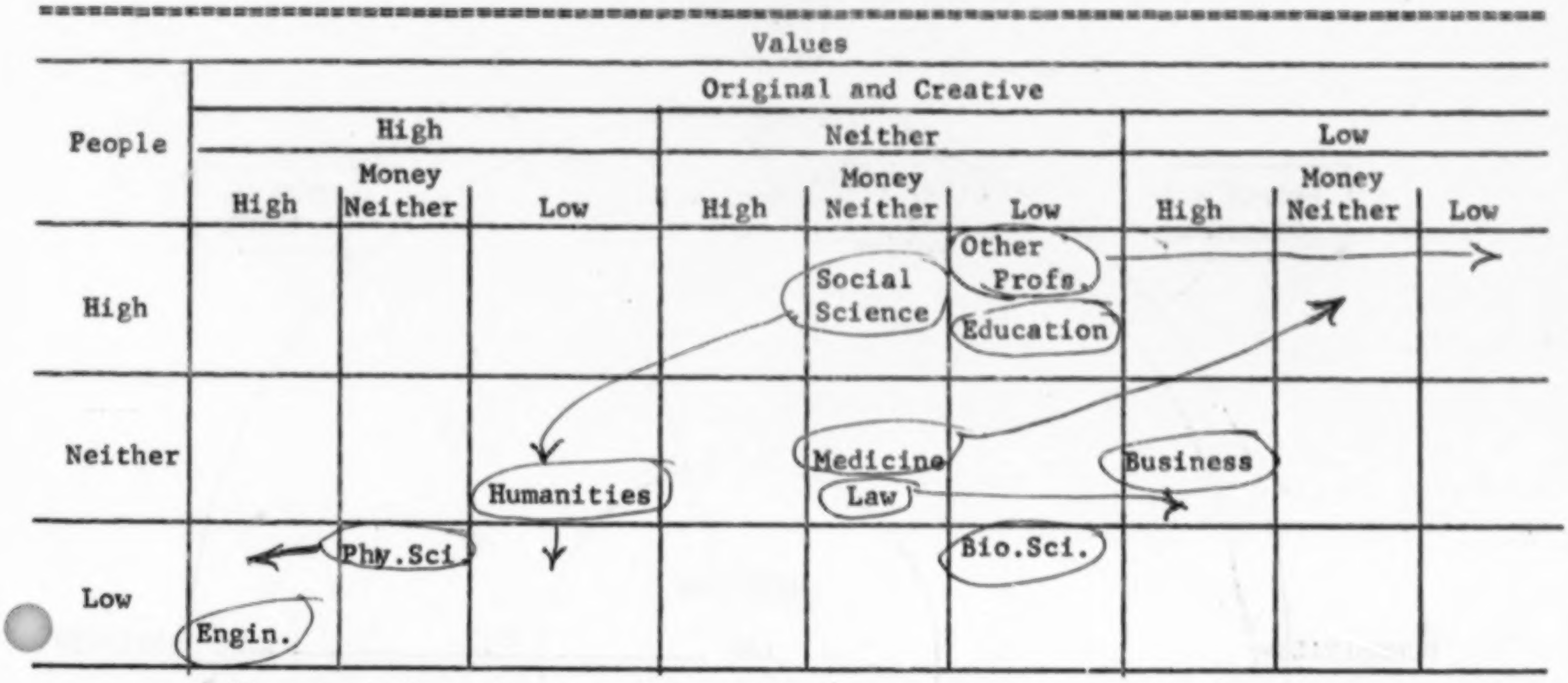
The changes for the six fields which show a shift in differentiation between freshman choice and senior choice are as follows:

1) Other Professions shift slightly clockwise to become "purely" people-oriented.
2) Humanities shifts slightly counter-clockwise to become "purely" originality-oriented.

TABLE 3.19

CAREER FIELD TURNOVER: TRENDS IN OCCUPATIONAL VALUES, "PEOPLE," "ORIGINAL," AND "MONEY"

a) Freshman to Senior Change



	Values								
	Original and Creative								
People	High			Neither			Low		
	Money			Money			Money		
	High	Neither	Low	High	Neither	Low	High	Neither	Low
High					Social Science	Other Profs. Education			
Neither			Humanities		Medicine Law		Business		
Low	Engin.	Phy.Sci.				Bio.Sci.			

Cell entry = location according to Freshman Q: if arrow, tip = location according to Senior Q: High = >+.15, Low = < -.15, Neither = +.15 > Q > -.15.

b) Senior Position

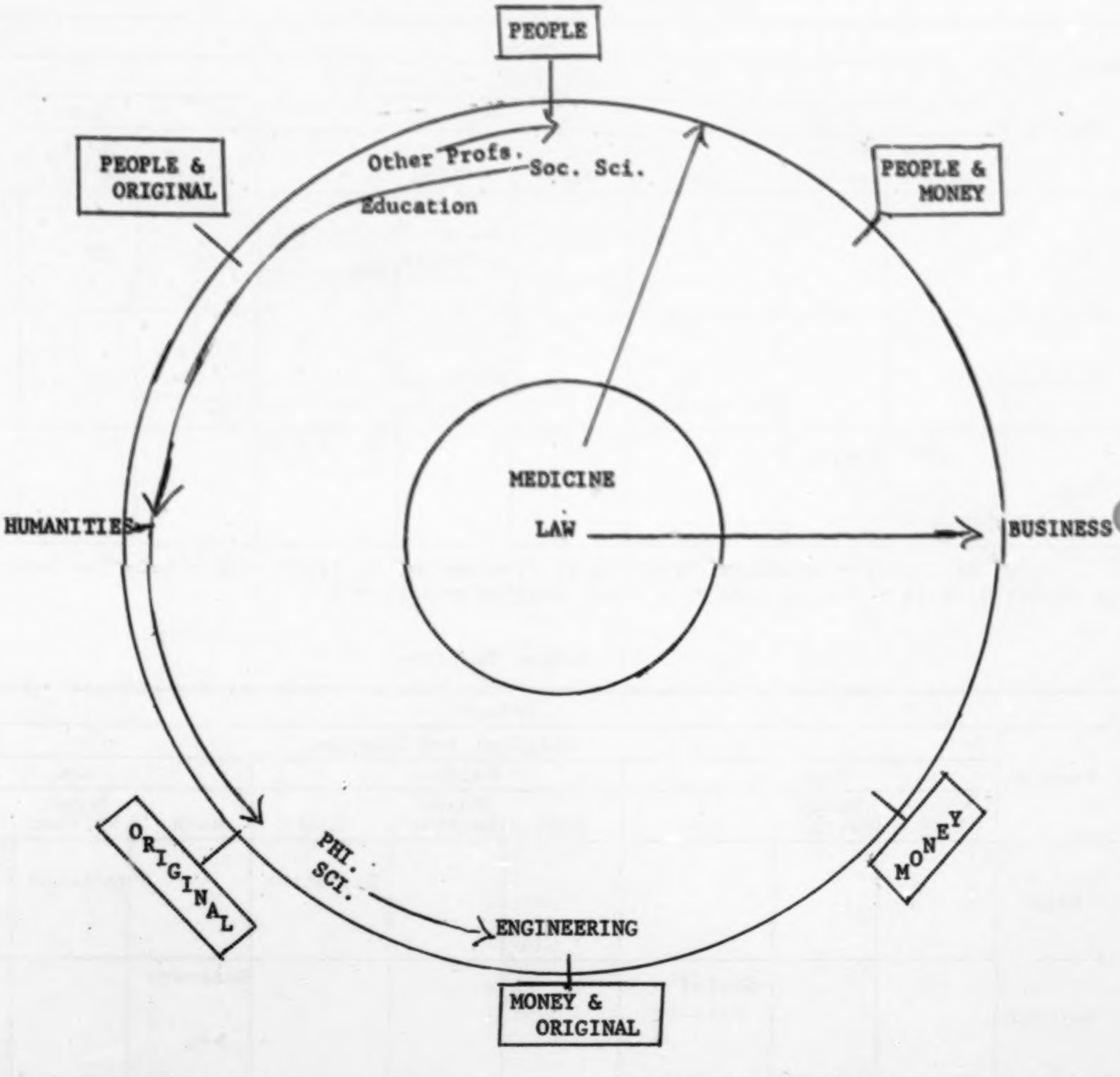
	Values								
	Original and Creative								
People	High			Neither			Low		
	Money			Money			Money		
	High	Neither	Low	High	Neither	Low	High	Neither	Low
High						Education		Medicine	Other Profs.
Neither			Social Science				Business Law		
Low	Phy.Sci. Engin.		Humanities			Bio.Sci.			

Cell entry = location according to Senior Q.

TABLE 3.19

TABLE 3.19 a) IN GRAPH FORM

c) Freshman to Senior Change

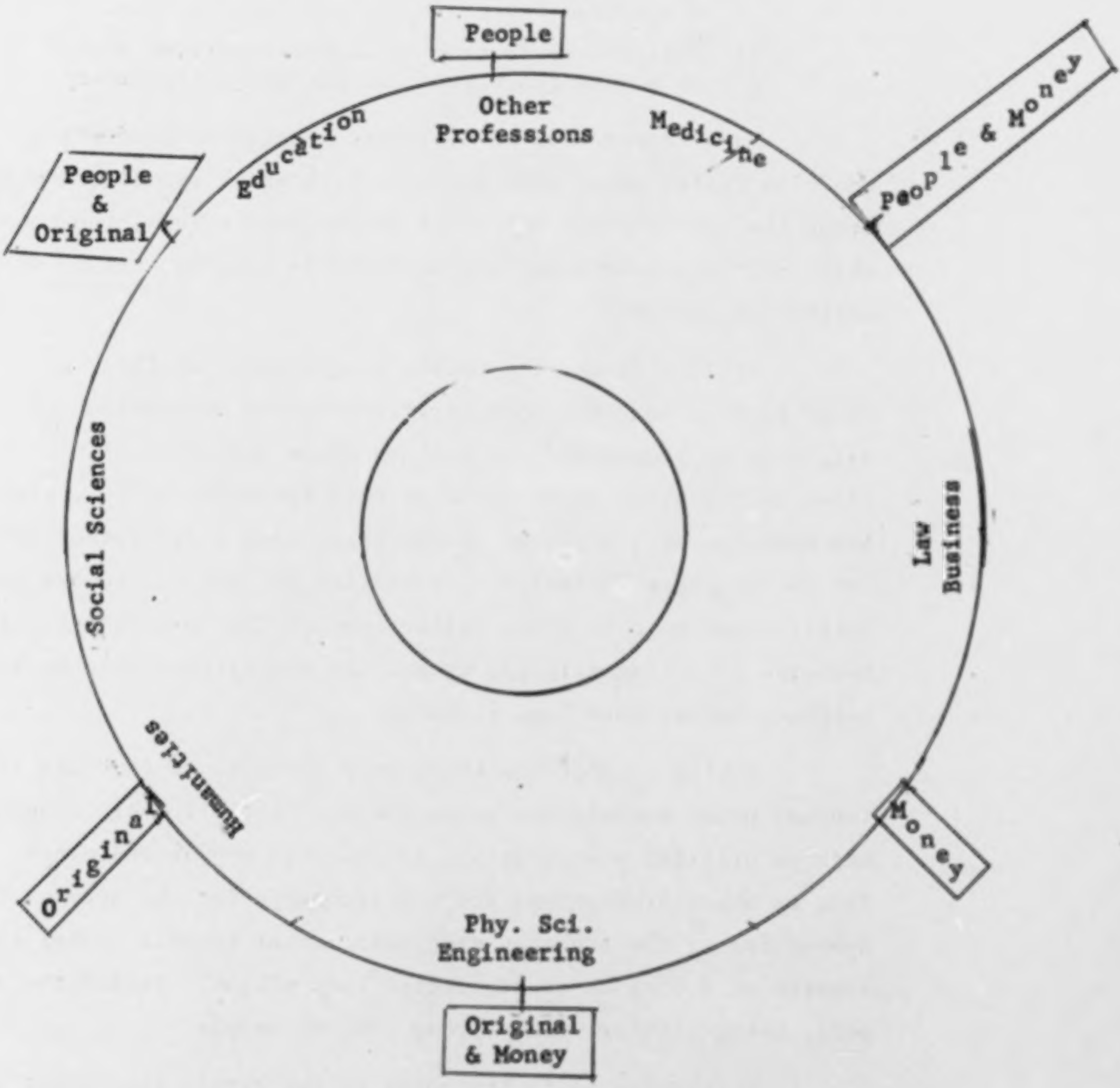

PEOPLE
PEOPLE & ORIGINAL
PEOPLE & MONEY
Other Profs.
Soc. Sci.
Education
MEDICINE
LAW
HUMANITIES
BUSINESS
ORIGINAL
MONEY
PHI. SCI.
ENGINEERING
MONEY & ORIGINAL

(Bio. Sci. Excluded)

TABLE 3.19--Continued

d) Senior Position

(Table 3.19 b) in graph form)


People
Other Professions
Medicine
People & Money
Education
People & Original
Social Sciences
Law
Business
Humanities
Original
Money
Phy. Sci.
Engineering
Original & Money

(Bio. Sci. Excluded)

3) Physical Sciences shift slightly clockwise moving away from pure originality to money and original.

4) Social Sciences shift from an essentially people-oriented field toward becoming an originality-oriented field.

5) Law moves from an undifferentiated state to a position between money and money-people.

6) Medicine moves from an undifferentiated state to a position between people and people-money.

As a consequence of all these changes at graduation, the nine fields other than Biological Sciences are distributed about the entire clock and their predominant values, the ones which differentiate them from students in general, may be described as follows:

At 12 o'clock, the purely people pole, we find the Other Professions, the most service-oriented occupations of all, high on people and low on both money and originality. Close to the Other Professions we find Education at 11 o'clock and Medicine at 1 o'clock. While their values are rather similar to the Other Professions, Education is "pulled" toward the intellectual pole by being neither, rather than low, on originality, Medicine is pulled slightly toward the acquisitive pole by being neither, rather than low, on money.

Moving counter-clockwise to 8 o'clock, we find the intellectual pole, Humanities, being the most intellectual occupation, high on original and creative, low on both people and money. Just as Other Professions are the archetype for the service fields, Humanities is the archetypical intellectual field. Social Sciences located at 9 o'clock are deflected back slightly toward the service pole, being neither, rather than low, on people.

Continuing on to the point in the circle equivalent to 6 o'clock, we find the applied sciences, typified by high originality and money and low, people. These values characterize Physical Sciences and Engineering.

There appears to be no purely acquisitive occupation, none of the fields being high on money and low on people and originality. However, Law and Business, at 3 o'clock on the dial, located halfway between money and money-people, do form a pecuniary type. One way of viewing the situation would be to say that except for those with inherited wealth, no one can make money "period," rather one has to make money at something. The applied scientist and engineer makes money by being original and creative in working with "things," while the lawyer and businessman more often makes his money in relationships with other people.

While the process is a complex one involving differentials continuing from before college, differentials in retention, and differentials in recruitment, the fields do change during college. While no field reverses itself during the four years of college, it appears that, particularly for Social Sciences, Medicine, and Law, the value configuration at graduation is sufficiently different to justify the claim that something does happen in college. While the general line of evidence is for continuity of freshman choice and freshman characteristics, the data on values (although the fact that the data are not from panel observations means they can only be considered suggestive) do suggest enough of a change to justify the conclusion that exposure to (or at least during) college does go along with making occupational choices which are congruent with personal values.

Index of Background Characteristics (IBC)

In Chapter II, it was explained that the background characteristics of race, religion, socio-economic status (SES), and size of hometown were compressed into a thirteen category index, which is used to tap the pre-college social environments to which the students have been exposed. On the whole, these characteristics do not have as strong relationships as sex, API, and the three value items. For particular occupations and particular background characteristics, however, the associations are strong enough to merit attention.

The data for race are considered in Table 3.20. It has already been noted that the case bases are rather small, and for eight out of ten occupations the weighted total of cases for freshman choosers is less than 100. As we have noted that for Negroes, recruitment, retention and freshman Q's tend to diverge, it is hard to draw generalizations about the occupational choices of Negroes. Whether this is because of the unreliability of the figures or the unique social experience of American middle-class Negroes is impossible to say. The following suggestions are noted, however:

a) Negroes seem unattracted to Business, for reasons which seem intuitively obvious. They underchoose Business as freshmen (Q = -.398), are not recruited to Business (Q = -.638) and at graduation, Business is the only field with less than two per cent Negroes. Those few who do choose the field initially do not, however, show high rates of defection.

b) Negroes appear to be attracted to Other Professions and Education, both fields showing positive freshman Q's, positive Recruitment Q's, and positive associations for senior choice.

c) Because of the small number of Negroes and the lack of consistent race differences in choice, no field increases or decreases its (small) per cent of Negroes by one per cent during college.

d) The only consistent transition differences are for Negroes to defect from Medicine (Q = -.305) and to not be recruited to Medicine (Q = -.817).

SES is summarized in Table 3.21. Law, Medicine, Humanities, and Social Sciences, all show some association with high SES. High SES students show an affinity for Law, in particular. Initially as freshmen (Q = .435), in terms of retention (Q = .284) and

TABLE 3.20

CAREER FIELD TURNOVER AND RACE

("Q" Coefficients)

Field	Freshman Career	Retention	Recruitment	Senior Career	Difference Per cent Negro	Per cent Senior Negro
Bio. Sciences* (47).	+.361	-.245	+.395	+.341	0	6
Other Professions . .	+.235	**	+.213	+.251	0	5
Education	+.240	**	+.279	+.239	0	5
Soc. Sciences* (59).	+.327	-.290	**	**	0	4
Phy. Sciences* (50).	-.330	**	**	**	0	2
Medicine* (91) . . .	**	-.305	-.817	-.237	0	2
Law* (28).	-.306	+.184	-.319	-.274	0	2
Humanities* (50) . .	-.263	-.570	**	-.291	0	2
Engineering* (97). .	-.428	**	+.312	-.294	0	2
Business* (82) . . .	-.398	**	-.638	-.516	0	1

*Weighted case base for original freshman < 100. Number in parenthesis equals case base.

** +.15 > "Q" > -.15

TABLE 3.21

CAREER FIELD TURNOVER AND SEX#

("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent High SES	Per cent Senior High SES
Law	+.435	+.284	+.279	+.408	-1	73
Medicine . .	+.370	*	+.486	+.382	+1	72
Humanities .	+.192	*	+.256	+.235	+2	64
Soc. Sci. . .	+.215	*	+.186	+.175	-2	62
Bio. Sci. . .	*	*	*	*	+1	58
Business . .	*	*	*	*	+4	57
Other Profs..	*	*	*	*	-1	53
Phy. Sci. . .	*	-.181	-.173	*	-7	48
Education . .	-.184	*	*	-.165	+1	48
Engineering .	*	-.148	*	-.177	-3	45

#Among white Protestants, Catholics, and Jews.

* = +.15 > Q > -.15

recruitment (Q = .279) and in terms of senior choice (Q = .408), the legal profession is distinctively overchosen by students from higher SES families. Medicine, Humanities and Social Sciences, while not showing SES differences in retention, do show positive Q's for freshman choice, recruitment and senior choice (Q's range from .175 to .382), so that it is fair to say that there is a continuing high status trend for the four fields.

No clearly low status trend emerges from the data, however. Education tends to recruit freshmen who are lower in SES (Q = -.184) and seniors in Education are lower in status (Q = -.165), but SES is unrelated to recruitment or retention in Education. The reverse holds in the Physical Sciences, where high SES students tend to defect (Q = -.181) and to not be recruited (Q = -.173), but there is no appreciable freshman or senior association between SES and Physical Sciences. Engineers show a negative association between SES and retention (Q = -.148), but no freshman or recruitment coefficient worth noting.

As might be expected from these spotty trends, there is little change in the SES composition of the fields over the four years. The per cent high SES in Physical Sciences does decline by seven per cent, but all other changes are small. This is not to say, however, that there are no status differences in the occupations. More than 70 per cent of the aspiring lawyers and doctors come from families coded high on SES, while less than half of the Physical scientists, Educators and Engineers come from high status families.

The recruitment of high-status persons into the traditional professions of Law and Medicine and the more genteel academic areas of Humanities and Social Sciences has long been noted, as well as the greater ease of entry for poorer boys and girls into Engineering, Education and Sciences. Although the associations are not especially large, the data in Table 3.21

support these interpretations; however most of the differences appear to stem from pre-college differentiation rather than class factors in decisions during college.

Table 3.22 summarizes the coefficients concerning size of hometown, dividing the students into those from cities 100,000 or more (or their suburbs) versus those from smaller towns and rural communities.

Four of the ten fields show some fairly consistent differences. Social Sciences, Law, and Medicine have a rather distinctive big-city flavor. In each, the freshmen choosing the fields are more likely to come from larger cities, size of hometown is related to retention or recruitment or both, and seniors choosing these fields are more likely from larger cities. Education, on the other hand, has a less metropolitan flavor. Students choosing Education as freshmen are less likely to come from larger cities, recruits to Education are less likely to come from larger cities, and at graduation, 39 per cent of those in Education are from larger cities, in contrast to 60 per cent in Social Sciences, Law, and Medicine.

Table 3.23 a) - d) presents the coefficients for the data on religion. Because there is considerable scholarly and popular concern with the relationships between religion and career choice (Are too few Catholics going into Science? Are Jews staying out of Business careers because of fears about discrimination? Is the "Protestant Ethic" of Protestantism associated with interest in Science?) the data will be considered in some detail.[10]

There is no Protestant trend for any occupational group in the sense of a field with positive associations for retention

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[10] A wide variety of materials from this survey pertaining to religion is analyzed in Andrew M. Greeley, "The Impact of Religion on the Career Plans and Occupational Values of the June, 1961 College Graduate," (unpublished Ph.D. Thesis, Department of Sociology, University of Chicago, 1962).

TABLE 3.22

CAREER FIELD TURNOVER AND SIZE OF HOMETOWN#

("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent Larger Hometown	Per cent Senior Larger Hometown
Soc. Sci. .	+.307	*	+.251	+.274	-2	60
Law	+.258	+.183	+.189	+.262	0	60
Medicine . .	+.211	+.169	*	+.257	+3	60
Business . .	*	*	*	*	0	53
Phy. Sci. .	+.177	*	*	*	-2	53
Humanities .	*	*	+.165	*	+2	52
Engineering	*	*	*	*	+1	50
Bio. Sci. .	*	*	*	*	-5	44
Other Profs.	*	*	*	*	+1	42
Education .	-.233	*	-.192	-.231	+1	39

#Among white Protestants, Catholics, and Jews.

* = +.15 > Q > -.15

TABLE 3.23

CAREER FIELD TURNOVER AND RELIGION [#]

a) Protestant

("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent Protestant	Per cent Senior Protestant
Other Profs. .	+.197	*	*	+.168	-1	70
Education . .	+.168	*	*	+.148	-1	68
Engineering .	*	*	*	*	+1	65
Bio. Sci. . .	*	*	*	*	+7	65
Humanities . .	*	*	*	*	-1	63
Soc. Sci. . .	-.158	+.265	*	*	+5	61
Phy. Sci. . .	-.166	*	*	*	+4	60
Business . . .	*	-.274	*	*	0	58
Medicine . . .	-.231	-.251	-.162	-.315	-5	40
Law	-.401	*	-.326	-.377	+1	45

[#] Among white Protestants, Catholics, and Jews.

* = $+.15 > Q > -.15$.

TABLE 3.23--Continued

b) Roman Catholic

("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent Catholic	Per cent Senior Catholic
Law	+.297	*	+.167	+.203	-4	36
Business . . .	+.151	+.243	*	+.173	0	33
Phy. Sci. . . .	+.156	*	*	*	-3	30
Engineering . .	*	*	*	*	0	28
Medicine . . .	*	*	-.177	*	-1	28
Humanities . .	*	*	*	*	0	27
Bio. Sci. . .	*	*	*	*	-4	26
Soc. Sci. . .	*	-.187	*	*	-3	24
Other Profs. .	-.146	*	*	*	+1	24
Education . . .	*	*	*	*	+1	24

* = +.15 ⊳ Q ⊳ -.15.

TABLE 3.23--Continued

c) Jewish

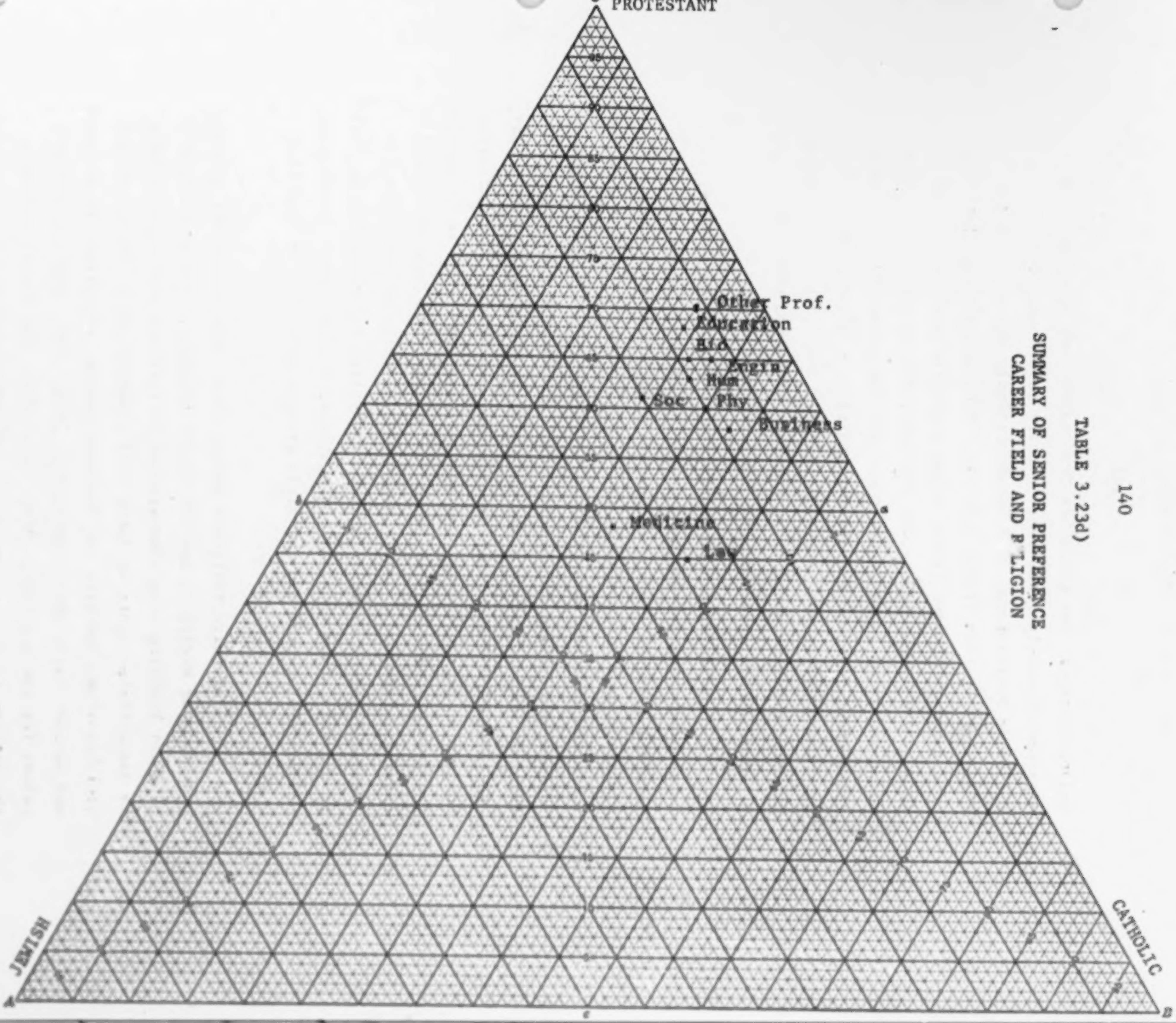
("Q" Coefficients)

Field	Freshman	Retention	Recruitment	Senior	Difference Per cent Jewish	Per cent Senior Jewish
Medicine . . .	+.400	+.362	+.522	+.538	+6	24
Law	+.331	+.358	+.401	+.431	+3	19
Soc. Sci. . .	+.335	-.220	+.322	+.288	-1	15
Humanities . .	*	*	*	*	0	10
Phy. Sci. . .	*	*	*	*	0	10
Bio. Sci. . .	*	*	*	*	-2	9
Business . . .	*	+.180	*	*	0	9
Education . .	*	*	*	-.149	0	8
Engineering .	*	*	-.196	-.165	-1	7
Other Profs. .	-.220	-.171	*	-.225	0	6

$^{*} = +.15 > Q > -.15.$

TABLE 3.23d)

SUMMARY OF SENIOR PREFERENCE CAREER FIELD AND RELIGION



and recruitment, but the Other Professions and Education are disproportionately Protestant at entry to college (Q = .197 for Other Professions, .168 for Education), and continue to be so at graduation [Table 3.23 a)]. Medicind and Law, however, show a non-Protestant trend, being initially less Protestant (Q =-.231 for Medicine, -.401 for Law); Protestants show higher defection rates in Medicine (Q = -.251 for retention) and lower recruitment rates (Q = -.162 for Medicine, -.326 for Law). At graduation Protestants comprise slightly less than half of those choosing Medicine and Law, in contrast with more than two-thirds of those in Education and the Other Professions.

Considering Roman Catholics in the IBC categories, it is seen that Law and Business tend to attract Roman Catholic students somewhat disproportionately [Table 3.23 b)]. Roman Catholics tend to overchoose Law as freshmen (Q = .297), to be recruited into Law (Q = .167) and at graduation the association between Catholicism and Law is .203. Similarly for Business, the freshman coefficient is .151, the value of Q for retention is .243, and the senior Q is .173. While a case may be made that Catholics do show an attraction for Law and Business, it should be noted that the data in Table 3.23 b) do not reveal any "not-Catholic" field. Despite claims and counterclaims about Catholic propensities for Humanities or Catholic avoidance of Physical Sciences, for no field in the data other than Law and Business, is the senior association between Catholicism and the field greater than .15 or less than -.15.

The third religious group, Jews, show a distinct pattern, overchoosing Medicine, Law and Social Sciences. The proclivity of Jews for Medicine, long acknowledged in folklore and research data, is demonstrated again in Table 3.23 c) where the Q values between "Jewishness" and Medicine for freshman choice, retention, recruitment and senior choise are: .400, .362, .522, .538. The comparable Q values for Law are .331, .358, .401, .431. For Social Sciences the pattern is not so consistent, with "Jewishness" being associated with freshman choice (Q = .335), recruitment (Q = .322), and senior choice (Q = .288), but reversed for retention (Q = .220) a discontinuity noted in the previous discussions of Social Sciences. There are no non-Jewish fields as sharply delineated as Law, Medicine, and Social Sciences, but the Other Professions do show a non-Jewish trend, the freshman, retention, and senior Q's all being negative. Similarly, the negative recruitment and senior Q's for Engineering, and the negative senior Q for Education suggest that Other Professions, Engineering, and Education have less attraction for Jewish students.

The amount of differentiation indicated is shown by the percentage of Jews in various fields at graduation. Medicine is 24 per cent Jewish,[11] Law 19 per cent, Social Sciences 15 per cent, and all other fields range from six to ten per cent.

The distribution by religion of seniors choosing various fields is shown in Table 3.23 d) on a triangular coordinate graph. There are three axes on the graph corresponding to the proportions of Protestants, Catholics, and Jews and each dot falls on each axis so that the three percentages can be read off. The general conclusion from inspection of the graph is that except for Law and Medicine there is not much religious variation. All the remaining fields are between 58 and 70 per cent Protestant; 24 to 33 per cent Catholic, and six to 15 per cent Jewish. A case could be made that Social Sciences are considerably more Jewish, Business consistently more Catholic, and Other Professions and Education considerably more Protestant, which is consistent with the previous findings but the similarity is probably more striking than the differences. Medicine and Law, however, stand out as rather different; each has less than 50 per cent Protestants, Law having a high proportion of Jews and Catholics, and Medicine having a high proportion of Jews.

The pattern in Table 3.23 d) provides a way of summarizing the general implications of the findings on the IBC items. By and large their relationships are less impressive than the sex, API, and value items considered previously, and indeed one would be surprised if size of hometown had as important an effect on career choice as, say, whether or not one was interested in making money. However, the IBC differences do not fall evenly across the occupations as did the differences in sex, API, and values.

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[11] The statement should be qualified as follows: Among students who gave both an initial and senior career field and who were scored on the IBC, 24 per cent of the seniors choosing Medicine were Whites and Jewish. The construction of the Index of Background Characteristics is described in detail in the previous chapter.

Of the 78 Q's for freshman choice, retention, recruitment, and senior choice which have absolute value of .15 or more, 46 (or 59 per cent of the total) involve Law, Medicine or Social Sciences. That is, these three occupations tend toward greater differentiation in background characteristics than do the remaining fields. The Other Professions, Business, Physical Sciences, Humanities, and Engineering each have six or fewer noteworthy coefficients, in comparison with 13 for Social Sciences, 15 for Medicine, and 18 for Law.

We can summarize as follows:

For most fields, background characteristics are not strongly related to field choice, but being from a high SES family, coming from a larger city, and being Jewish tend to be associated with choice of Law, Medicine, or Social Sciences. Conversely, while its differentiation is not so extreme, lower SES origins, smaller hometowns, and Protestant religion, tend to be characteristic of students entering Education.

Why these social differences should obtain--whether they reflect subcultural occupational values, college influences, or differential opportunities, is not clear. These questions will be treated later in the analyses of these data. What these figures do tell us is the degree of social differentiation of students entering different fields. While differentiation is of some interest, family background plays only a minor role in career choices for the bulk of the students, since Law, Medicine, and Social Sciences combined amount to 11 per cent of the senior career choices.

Summary

The upshot of all these changes is the distribution of career choices for the 1961 graduating class (Table 3.24). As we have already reviewed the distribution of freshman choices, and have seen that the changes during the four years amount to only minor modifications, the table contains few surprises. However, its intrinsic significance is such that it is useful to review the fields chosen by the graduating class.[12]

1) The largest single field is primary and secondary education. One out of three seniors (32.2 per cent) expects to enter an educational field as a long-run career. Because 12 per cent (RSS) check "college, university, or junior college" as a future employer, and these two groups are essentially mutually exclusive, it appears that somewhere between 40 and 45 per cent of the seniors expect to be employed in education.

2) Despite the prominence of science and the heavy emphasis now being given to scientific careers, physical and biological scientists amount to only 7.5 per cent and engineers 8.3 per cent, giving a total of 15.8 per cent for Natural Sciences and Engineering.

3) About one-fifth (18.0 per cent) expect to enter some arts or science field (Physical Sciences, Biological Sciences, Social Sciences, Humanities and Fine Arts).

4) About one-fifth (18.2 per cent) expect to enter Business and administrative fields.

5) About one-fifth (20.8 per cent) expect to enter the traditional professional fields of Engineering, (8.3 per cent), Health Professions other than Medicine (4.0 per cent), Law (3.9 per cent), Medicine (2.8 per cent), and Social Work (1.8 per cent).

Roughly speaking, then, one-third expect to go into Education, three-fifths are evenly divided among Arts and Sciences,

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[12] The classification used in Table 3.24 is slightly different from that employed in the previous analysis.

TABLE 3.24

PERCENTAGE DISTRIBUTION OF RESPONDENTS BY ANTICIPATED CAREER FIELD

	Per cent		
Arts and Science Fields			18.0
Physical Sciences		5.4	
Chemistry	1.9		
Mathematics and Statistics	1.6		
Physics	1.2		
Other (Astronomy, Astrophysics, Geography, Geology, Geophysics, Oceanography, Metallurgy, Meteorology, and Other)	0.7		
Biological Sciences		2.1	
Social Sciences (Clinical Psychology, Social Psychology, Industrial Psychology, Experimental and General Psychology, Other Psychological Fields, Anthropology, Economics, Area and Regional Studies, Political Science, Sociology, Social Science, General and Other)		4.0	
Humanities (Fine and Applied Arts, English and Creative Writing, Classics, History, Modern Languages and Literatures, Humanities, General and Other)		6.5	
Professional Fields			59.3
Primary and Secondary Education (excluding college and junior college)		32.2	
Engineering		8.3	
Other Health Professions (Dentistry, Nursing, Optometry, Pharmacy, Physical Therapy, Occupational Therapy, Medical Technology or Dental Hygiene, Other Health Fields)		4.0	
Law		3.9	
Medicine		2.8	
Social Work		1.8	
Other Professions (Architecture or City Planning, Foreign Service, Home Economics, Journalism-Radio-Television-Communications, Library or Archival Science, Theology or Religion)		6.3	
Other			19.7
Business and Administration (Advertising and Public Relations, Accounting, Public Administration, Secretarial, Military, Other business and commercial fields)		18.2	
Agricultural and Related Fields (Agricultural Sciences, Forestry and Fish and Wild Life Management, Farming, Veterinary Medicine)		1.5	
Respondent checked "Job which has no near equivalent in this list"			2.8
Total		99.8%	99.8%

N =	54,172
Do not expect to work after graduation	901
NA	1,591
Total Weighted N =	56,664

Business, and Major Professions, and the remainder are scattered over a variety of smaller fields.

In this chapter we have analyzed the data on how this distribution arose from changes in the distribution of freshman preferences.

The major findings may be summarized as follows:

A) Concerning shifts between particular fields:

1) Approximately half of the graduates report either a shift in career plans between the major occupational groups or the development of specific career intentions from "no preference" as freshmen.

2) In terms of losses, fields vary from a 15 per cent defection among freshmen who chose Education to a 64 per cent loss among freshmen choosing Social Sciences. In terms of gains there is a range from 16 per cent of the non-educators who shifted into Education to less than one per cent of non-physicians who shifted into Medicine.

3) Considering the balance of recruitment and attrition, the occupations seem to fall into three groups:

a) Gainers: Business and Education, the two fields with low losses, high gains, and net increases.

b) Losers: Medicine, Engineering, Physical Sciences and Other Professions, the fields with high loss rates, and recruitment rates insufficient to prevent a decline.

c) Traders: Social Sciences, Biological Sciences, Law and Humanities, the fields with high loss rates but recruitment rates which more than offset the defections.

4) When net gains and losses between specific pairs of fields are examined, a ranking appears (Education, Business, Social Sciences, Humanities, Biological Sciences, Other Professions, Law, Physical Sciences, Medicine, and Engineering) such that fields which precede another in the list show net gains in the exchange of students with each subsequent field.

5) Despite all of this, the distributions of choices for freshman and senior careers are remarkably similar, the greatest difference being an increase in the per cent choosing Education from 25 to 33 per cent.

B) Concerning the major pattern of findings for correlates of change:

6) In general, the items which discriminate between defectors and those remaining in a field are the same as those distinguishing between recruits and non-recruits. Thus, the same sorts of characteristics are related to remaining in a given field and shifting into it from a different freshman choice.

7) In general, the items related to choice during college are the same items which were associated with freshman choice. Thus, differentiation during college tends to continue directions of selection already begun at entry into college.

8) Social Sciences constitute an exception to these generalizations, the suggestion being that college experience leads to a shift in the sort of student attracted to these fields.

C) Concerning specific characteristics:

9) Sex: The initially masculine fields (Engineering, Law, Medicine, Business, and Physical Sciences) show a masculine trend in retention and recruitment, while the initially feminine fields of Education and Humanities show a feminine trend. By an odd, but inevitable, statistical quirk, the net result is for all fields to become somewhat more masculine.

10) Academic Performance: Medicine, Humanities and Social Sciences show a high API trend, while Business shows a low API trend. Over the four years, the per cent of future physicians high on API rises from 68 to 82; but because Medicine is a small field, no other field declines in API as a result.

11) Occupational Values: Many of the changes during college can be interpreted as increasing the congruence between personal values and the values satisfied by work in different fields. The net result is that Other Professions and Medicine shift toward people; Humanities and Social Sciences shift away from people; Law and

Physical Sciences shift toward money making, while Business, Education, and Engineering maintain their freshman value distribution.

12) Index of Background Characteristics: The IBC items show less strong relationships than the other background measures, but Law, Medicine and Social Sciences show a trend toward high status, big city, and Jewish students, while Education tends to have a relatively greater attraction for lower SES, smaller city, and Protestant students.

As for our initial question of how important is college as an influence on career choice, in spite of (or perhaps because of) the detailed findings, the general conclusion remains much the same as our initial impression.

Viewed from a very abstract point of view, the changes during the four years of college hardly suggest that college experience is decisive for occupational choice: a) by and large the students come out oriented to the jobs they chose as freshmen, b) by and large the changes which do occur appear to be a continuation of trends which began before entry into college.

Viewed from a more detailed perspective, the changes during college are sufficient to justify considerable interest in the process: a) half the students change or choose a career during college, b) particular fields such as Engineering, Medicine, Social Sciences, change considerably in popularity, c) the reversal of direction for Social Sciences suggests a strong effect of college on choice for that field, d) such trends as the API change in Medicine, the value shift in Law, and the drift of Negroes out of Business all indicate dynamics which would be missed if it were assumed that the decision to go to college freezes occupational choice.

None of this, however, tells us much about how these processes take place, or indeed whether all of the characteristics operate independently. Thus, while this chapter has laid out the basic dimensions of change during college, subsequent parts of this report will be required to produce a more specific answer to this question.

In the following chapter, we shall make one step toward a more specific set of answers by considering how choices for particular fields are related to simultaneous combinations of the characteristics treated in this chapter.

CHAPTER IV

CORRELATES OF CAREER PREFERENCE: NINE OCCUPATIONAL GROUPS

Although the study is focused on recruitment to postgraduate education, this is the beginning of the third consecutive chapter devoted to the analysis of a single statistical table which doesn't include graduate study as a variable. Therefore, it is perhaps useful to review where we stand.

The ultimate aim of the research is to learn about the factors involved in the recruitment of professional and graduate students in contemporary America. We shall see in subsequent chapters, however, that postgraduate training is so intimately tied to specific occupations that it is deceptive to think of "graduate school" in the same way one can think of "college." Despite the vaunted heterogeneity of American life, undergraduate education has a remarkably consistent structure. There are exceptions, of course (Catholic priests enter their work through a different educational pattern, dentists commonly begin professional school after three years of undergraduate work, etc.), but for the bulk of college graduates the system consists of four years of uninterrupted study, begun immediately after high school graduation, with certain commonalities to the curriculum (97 per cent of our sample reported one or more English courses during college, 94 per cent one or more Social Science courses, 97 per cent one or more courses in Mathematics or Natural Sciences, RSS).

Postgraduate study is quite different. At first glance it may appear to be merely another layer added to the cake of American education on top of college, high school, and primary school, but in many ways its structure is unique. To begin with, postgraduate training is entirely vocational. Thus, in the contemporary United States it is virtually impossible to pursue general liberal arts studies in degree programs beyond the bachelor's. In addition, depending on the vocational field in question, postgraduate study varies widely in duration (from one to a dozen years), continuity (Humanities Ph.D. students very seldom continue to the

Ph.D. without interruption, medical students seldom interrupt their studies), proportion of part-time students (from virtually none to virtually all), the proportion who enter directly from undergraduate college (in some fields all but a handful of students intend to begin postgraduate studies immediately, in other fields the bulk expect to go on but only after a year or so of practicel experience), and in the mechanisms for financing study.

Under the circumstances, it is hardly surprising to discover that the major factor in predicting plans for postgraduate study is the student's occupational preference. It thus becomes necessary to analyze occupational recruitment in order to understand recruitment to postgraduate studies.

Occupational recruitment during college, in turn, has been shown to be a complex process over time in which some differences are perpetuated from pre-college days and others develop from the sorting process during college. The net result is that at graduation fields of work differ considerably in sex composition, academic performance, values, and background characteristics. Having reviewed the general distribution of these characteristics in Chapter II and analyzed their associations with change and stability of career choice in Chapter III, we are now ready to examine the types of students who plan to enter various lines of work.

This chapter concludes the preliminary analysis by examining in detail for each field the dynamics of recruitment during college and the characteristics which set it off from other fields. "Other Professions" will be excluded because it is a residual category in the classification.

Education

Perhaps because its workshops are dispersed all over the land, perhaps because one tends to underestimate an organization made up mostly of women and children, and undoubtedly for other reasons in addition, it is often forgotten that primary and secondary education is one of the biggest businesses in modern America. It is also one of the social institutions which must, of necessity, consume a high proportion of its products. Whether or not the number is sufficient to supply the demand, about one-third of the 1961 college graduates expected to enter primary and secondary education as their career field. This is not only the largest occupational group in the study, but it is also the field which shows the greatest increase over the four years absolutely and relative to other fields.

Table 4.1 summarizes the tabulations on Education as a career field. Table 4.1 a) presents the zero order "Q" coefficients for freshman choice, retention, recruitment, and senior choice. At graduation educators differ from students in general on seven out of the eleven characteristics,[1] the single most differentiating factor being sex, with a senior Q value of -.749.

The seven items fall into three groups:

a) Being female, not wanting to make a lot of money, and wanting to work with people, are the strongest correlates of Education. Sex and the two value items not only are the best discriminators for senior choice, but are also related to freshman choice, retention and recruitment. That is, from before entrance to college, for both kinds of decision during college, and at time of graduation, being a female and having the "helpful" value pattern draws students toward Education and away from other fields.

b) Being a Negro and being from a smaller hometown are associated with freshman choice, recruitment, and senior choice, although the strength of the associations is smaller than for

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[1] The reader will remember that we are following the arbitrary rule that only Q values greater than .15 or less than -.15 will be considered worth detailed attention.

TABLE 4.1

CORRELATES OF CAREER CHOICE OF EDUCATION

a) "Q" Coefficients for Choice of Education

Variable	Freshman	Retention	Recruitment	Senior
Sex - Male	-.730	-.361	-.677	-.749
Value - Money	-.472	-.264	-.483	-.517
People . . .	+.432	+.241	+.420	+.468
Race - Negro	+.240	*	+.279	+.239
Hometown - Larger . .	-.233	*	-.192	-.231
SES - High	-.184	*	*	-.165
Religion - Protestant	+.168	*	*	+.148
A.P.I.	*	*	*	*
Value - Original . .	*	*	*	*
Religion - Catholic .	*	*	*	*
Jewish . .	*	*	*	*

* $= +.15 \geq Q \geq -.15$.

sex and values. While race and hometown are unrelated to retention among freshmen choosing Education, in terms of the other aspects of career decision, these background characteristics do differentiate educators.

c) Being from a low SES family and being a Protestant are related to freshman and senior choice of Education, but not to change or stability during college. Although SES and Protestantism are not strongly associated with the dynamics of choice during college, their carry-over from pre-college situation is such that at graduation low SES and Protestantism have a low, but definite relationship with entrance into Education.

d) API, the value of originality, being a Roman Catholic, and being Jewish have no notable association with any of the four measures of choice.

The relationships reported above are zero order associations in which no other items are held constant. Since the Education-related items have previously been shown to be highly correlated (women are high on people, low on money...Negroes are from lower SES families...low SES is associated with coming from a smaller hometown, etc.) it is necessary to examine combinations of factors in order to assess the independent effects of each. Additionally, because a given factor may affect the characteristics of seniors three different ways--through association with freshman choice, through association with retention, and through association with recruitment, each of the choice dimensions must be considered.

The sex and value items provide a convenient starting point for analyzing the factors involved in choosing Education. It has been shown that women are much less likely to endorse "making a lot of money" and much more likely to endorse working with people. A disinterest in money and a high interest in people being the hall marks of educators, one wonders whether the sex difference can be explained by the congruence between feminine values and the values associated with teaching, whether, for example, the money-oriented women who are not interested in people are still more likely to become educators than males with similar values.

Table 4.1 b) provides a straightforward answer to these questions--"Yes." For freshman choice, for retention of freshmen choosing Education, and for recruitment to the field--for each dimension of choice, sex, people, and money, contribute independently. The persistence of the sex difference is particularly striking. Women with the "wrong" values of money-making and thing-orientation show more of an educational bent than men with the "right" values of high people and low money, for freshman choice (33 v. 21 per cent), and recruitment (16 per cent v. 14 per cent) although they are somewhat more likely to defect (23 per cent v. 17). It is thus clear that the value measures do not explain the feminine bent for Education even though the tendency of women students to have values congruent with Education adds to the sex differential.

Remembering that women are more likely to get good grades (although they have no advantage in the very top grade averages, they net a high proportion of the "B's"), it is necessary to ask what differences in API turn up when the powerful sex difference is controlled. Table 4.1 c) discloses that the strong sex selectivity in Education has been masking an API effect.

Table 4.1 c) reveals that API is related to all three dimensions of choice:

a) Within each sex and value grouping, freshmen choosing Education are less likely to graduate with a high score on the Academic Performance Index. For example, among men with high people and low money values, 42 per cent of the freshmen choosing Education ended up high in API in contrast to 54 per cent of men with similar values but a different freshman career choice.

TABLE 4.1--Continued

b) Sex, Values, and Career Choice of Education

I. Per cent Choosing Education as Freshmen

Money	Sex			
	Male		Female	
	People		People	
	No	Yes	No	Yes
No	11 (10,396)	21 (8,593)	40 (5,023)	53 (11,119)
Yes	4 (4,467)	8 (3,883)	33 (855)	43 (1,632)

N = ... 45,968
NA Freshmen - Future Career . . . 9,573
NA Values 1,123
Total Weighted N = ... 56,664

II. Per cent Defecting Among Freshmen Choosing Education

Money	Sex			
	Male		Female	
	People		People	
	No	Yes	No	Yes
No	27 (1,119)	17 (1,816)	14 (2,022)	11 (5,934)
Yes	36 (195)	32 (319)	23 (284)	13 (705)

N = ... 12,394

III. Per cent Recruited to Education

Money	Sex			
	Male		Female	
	People		People	
	No	Yes	No	Yes
No	7 (9,277)	14 (6,777)	23 (3,001)	37 (5,185)
Yes	3 (4,272)	4 (3,364)	16 (571)	30 (927)

N = ... 33,374

TABLE 4.1--Continued

c) A.P.I., Sex, Values, and Career Choice of Education

I. Per cent Defecting Among Freshmen Choosing Education

Sex	Values		A.P.I.		A.P.I.--High Minus Low	Per cent High A.P.I.
	People	Money	Low	High		
	+	-	10 (2,321)	11 (3,613)	+1	61 (5,934)
Female	+ -	+ -	12 (1,114)	15 (1,613)	+3	59 (2,727)
	-	+	22 (117)	23 (167)	+1	59 (284)
	+	-	17 (1,047)	17 (769)	0	42 (1,816)
Male	+ -	+ -	27 (882)	30 (556)	+3	39 (1,438)
	-	+	34 (117)	40 (78)	+6	40 (195)
Total			15 (5,598)	15 (6,796)	0	55 (12,394)

II. Per cent Recruited to Education

Sex	Values		A.P.I.		A.P.I.--High Minus Low	Per cent High A.P.I.
	People	Money	Low	High		
	+	-	40 (1,724)	35 (3,461)	-5	67 (5,185)
Female	+ -	+ -	30 (1,348)	22 (2,580)	-8	66 (3,928)
	-	+	17 (173)	15 (398)	-2	70 (571)
	+	-	16 (3,099)	12 (3,678)	-4	54 (6,777)
Male	+ -	+ -	8 (5,942)	5 (6,899)	-3	54 (12,841)
	-	+	5 (2,028)	2 (2,244)	-3	53 (4,272)
Total			15 (14,314)	14 (19,260)	-1	58 (33,574)

N = ... 45,968
NA Freshmen - Future Career 9,573
NA Values 1,123
Total Weighted N = ... 34,664

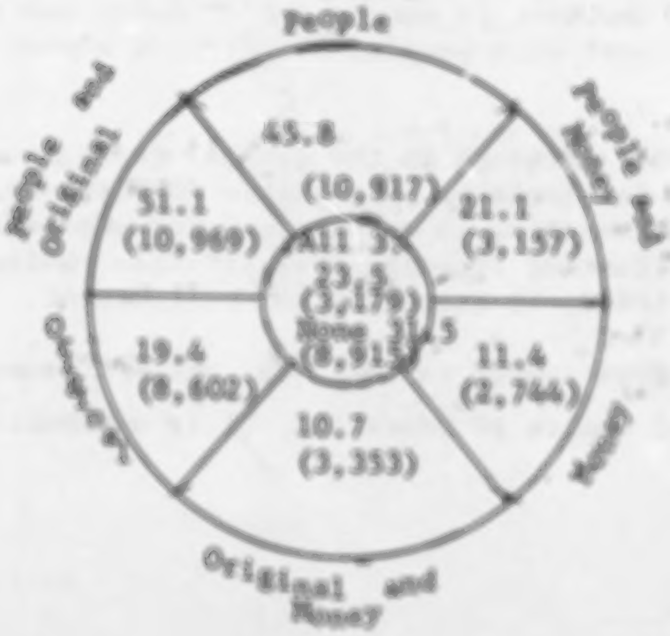
b) Within each sex and value grouping, low API students are more likely to be recruited into Education, although the differences are of five per cent or less in all but one comparison.

c) Within five of the six value and sex groupings, high API students are more likely to defect than those with low API's. The percentage difference is very slight in each comparison, but the tendency is for the superior rather than inferior scholars to defect.

While the recruitment and retention differences are not very strong, they are fairly consistent and when added to the freshman difference produce a consistent pull so that after four years, the continuing freshman year difference and the slight differences in retention and recruitment have a cumulative effect.

The simultaneous differences in values, sex, and API can be summarized by the use of the value wheel discussed in Chapter III. Six of the eight possible combinations on the three value questions may be represented by six slices of a pie (or spokes of a wheel). Below is the per cent of the seniors with different value types choosing Education.

Per cent of Seniors
Expecting Education
as Long-Run Career Field



Among seniors, educators are heavily concentrated toward the service quadrants between 9 and 12 o'clock (to shift the image again). Among those checking people and original 51 per cent plan to enter Education as their long-run career field, while among those circling money only, 11 per cent anticipate careers in Education.

Table 4.1 d) takes the same wheel and subdivides each spoke according to sex and academic performance. Two definite patterns emerge. Within each segment (or value type) choice of Education increases regularly as one moves from high API men at the periphery to low API men to high API women to low API women. At the same time, for each sex and API group, Education choices vary around the circle, with high percentages in the service sectors and low percentages in the money sectors. At the extremes, among low API women with people and original but not money as value choices, 73 per cent expect to enter Education, while among money-oriented low people, high API males, three per cent plan careers in Education.

To summarize:

1) The value configuration of wanting to work with people and indifference to making a lot of money is consistently associated with choice of Education as a career, for freshman choice, retention and recruitment, and regardless of sex and API.

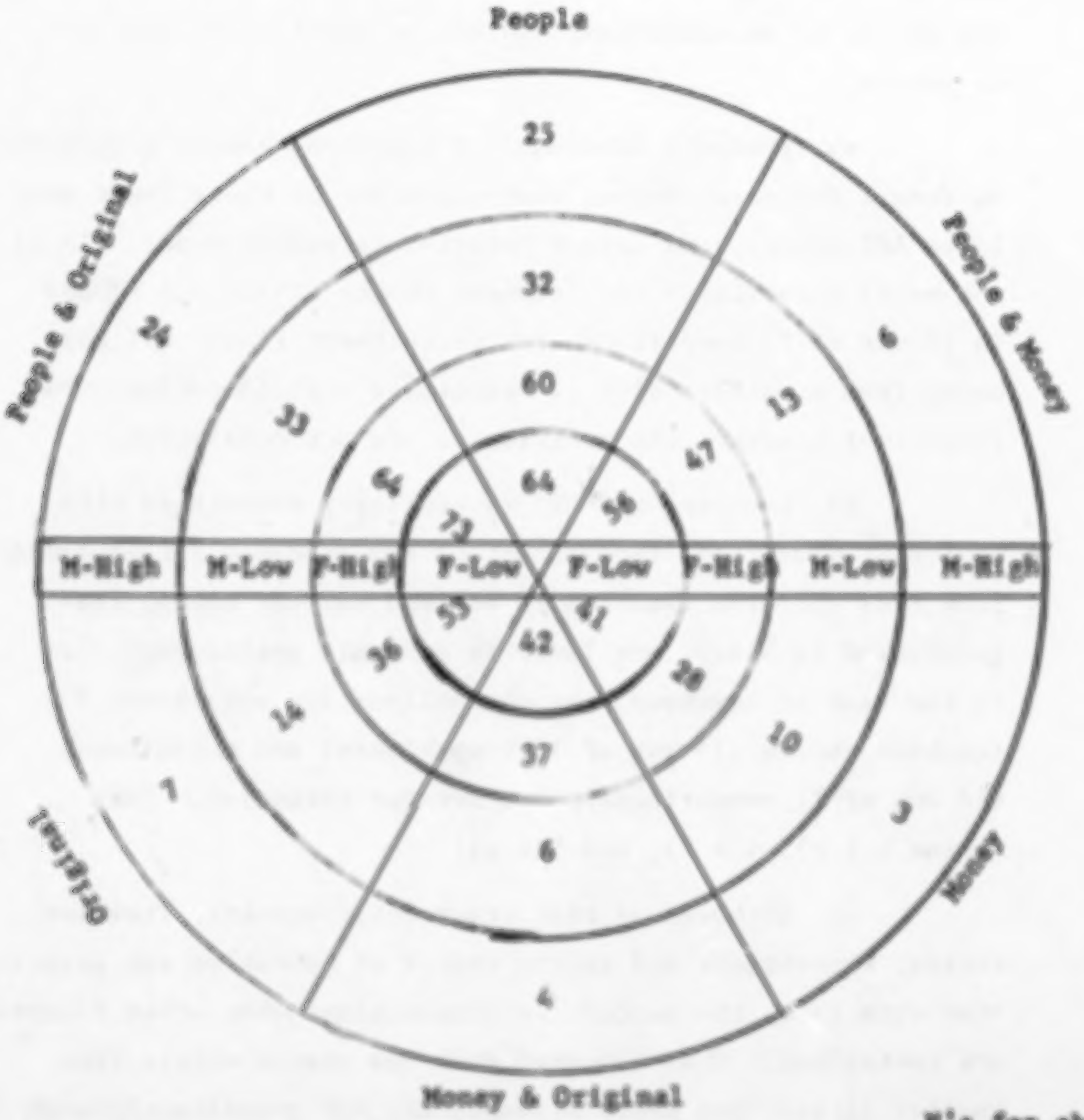
2) Regardless of values or API, women are more likely to choose Education as freshmen, retain their freshman choice of Education and to be recruited to Education. Even among high API women who want to make a lot of money and don't particularly prefer to work with people, 28 per cent expect careers in Education.

3) Although in the general group of seniors, choice of Education is unrelated to academic performance, within a sex group choice of Education is more common for students low on API, most of the difference stemming from freshman choice, but some resulting from trends in retention and recruitment.

Even though values, sex, and API provide powerful predictors of choice of Education, it is worthwhile to consider the

TABLE 4.1--Continued

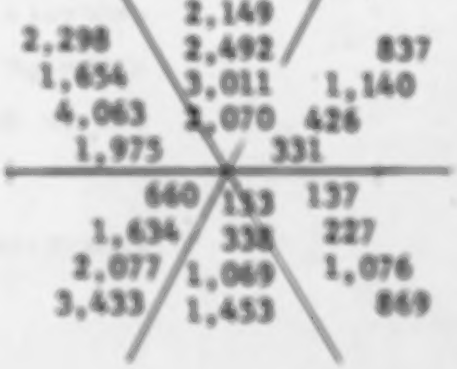
d) Per cent of Seniors Choosing Education by Sex, A.P.I., and Values



Values			Sex			
			Male		Female	
Money, Original, People			A.P.I.		A.P.I.	
			High	Low	High	Low
+	+	+	6 (1,106)	12 (800)	59 (365)	55 (310)
-	-	-	17 (2,079)	20 (2,807)	52 (1,568)	59 (1,161)

N =	45,968
NA Freshmen - Senior Career	9,573
NA Values	1,123
Total Weighted N	56,664

N's for above graph


2,149
2,298
2,492
837
1,654
3,011
1,140
4,063
2,070
426
1,975
331
660
133
137
1,634
338
227
2,077
1,069
1,076
3,433
1,453
869

index of background characteristics as an additional predictor even though the relationships are less strong.

Tables 4.1 e), 4.1 f), and 4.1 g) consider SES, race, and hometown as related to freshman choice, retention, and recruitment to Education. The IBC differences are shown, on the whole, to be consistent and not an artifact of sex, API, or values.

a) Students from smaller hometowns have a propensity to choose Education beyond that explained by their lower SES, lower API scores, and lesser interest in making money. In 21 out of 23 comparisons for freshman choice [Table 4.1 e)] and in 18 out of 21 comparisons for recruitment [Table 4.1 g)] being from a smaller city is associated with Education. For retention, however, the differences are not consistent.

b) Low parental SES is similarly associated with choice of Education, independent of the tendency for students from less affluent families to be from smaller towns, less interested in money, and lower in academic performance. As in the case of hometown, the comparisons are consistent for freshman choice (19 out of 23 comparisons) and recruitment (16 out of 21 comparisons), but not for retention. [See Tables 4.1 e), 4.1 f), and 4.1 g).]

c) Although as zero order relationships, freshman choice, recruitment and senior choice of Education are associated with race, the pattern is inconsistent when other factors are controlled. When compared with low status whites from smaller cities, the Negro students are not consistently high choosers of Education [see Tables 4.1 e), 4.1 f), and 4.1 g)], although so many of the case bases are small, no firm conclusion can be drawn.

d) The zero order association of Protestantism with Education apparently stems from the concentration of Protestants

TABLE 4.1--Continued

e) SES, Hometown, and Freshman Choice of Education, by Sex, A.P.I., Values, and Race

(Per cent Choosing Education)

Values		A.P.I.	Hometown	Sex					
				Male			Female		
				Negro	SES		Negro	SES	
People	Money				Low	High		Low	High
+	-	Low	Smaller	36 (113)	34 (1,367)	20 (791)	48 (180)	66 (1,083)	57 (910)
			Larger		24 (707)	13 (760)		56 (547)	52 (781)
+	-	High	Smaller	17 (97)	26 (1,070)	14 (917)	38 (128)	57 (1,422)	50 (1,873)
			Larger		21 (752)	8 (1,196)		53 (868)	47 (1,977)
±	±	Low	Smaller	27 (204)	20 (2,031)	10 (1,268)	43 (183)	54 (637)	40 (529)
			Larger		11 (1,168)	5 (1,360)		48 (290)	34 (444)
±	±	High	Smaller	28 (151)	14 (1,546)	6 (1,427)	58 (156)	47 (817)	38 (947)
			Larger		7 (1,301)	3 (2,169)		44 (518)	27 (1,243)
-	+	Low	Smaller	8 (51)	11 (571)	1 (385)	- (19)	59 (51)	- (49)
			Larger		7 (397)	1 (481)		28 (67)	38 (74)
-	+	High	Smaller	- (12)	5 (468)	1 (412)	- (27)	36 (99)	25 (139)
			Larger		2 (403)	2 (734)		22 (50)	35 (188)

N = ... 40,605
NA Freshmen - Future Career 9,573
NA Values, A.P.I. 1,123
NA Background 5,363

Total Weighted N = ... 56,664

TABLE 4.1--Continued

f) SES, Hometown, and Defection from Education, by Sex, A.P.I., Values, and Race

(Per cent Defecting Among Freshmen Choosing Education)

Values		A.P.I.	Hometown	Sex					
				Male			Female		
				Negro	SES		Negro	SES	
People	Money				Low	High		Low	High
+	-	Low	Smaller	- (41)	16 (471)	24 (157)	13 (87)	8 (719)	10 (522)
			Larger		19 (171)	17 (96)		9 (307)	13 (408)
+	-	High	Smaller	- (16)	22 (280)	39 (129)	- (48)	9 (805)	12 (945)
			Larger		13 (161)	24 (94)		13 (458)	13 (921)
+ -	+ -	Low	Smaller	9 (55)	25 (404)	27 (131)	11 (79)	7 (345)	16 (211)
			Larger		24 (127)	37 (62)		8 (138)	16 (152)
+ -	+ -	High	Smaller	- (42)	39 (213)	30 (88)	20 (90)	10 (382)	15 (356)
			Larger		16 (88)	36 (74)		8 (226)	22 (34[illegible])
-	+	Low	Smaller	- (4)	43 (65)	- (4)	- (6)	- (30)	- (23)
			Larger		- (29)	- (3)		- (19)	- (28)
-	+	High	Smaller	- (3)	- (24)	- (6)	- (18)	- (36)	- (35)
			Larger		- (12)	- (17)		- (11)	- (49)

N = ... 10,861
Freshmen Not Choosing Education 29,744
NA, Not Included 16,059

Total Weighted N = ... 56,664

TABLE 4.1--Continued

g) SES, Hometown, and Recruitment to Education, by Sex, A.P.I., Values, and Race

(Per cent of Freshmen in Other Fields Recruited to Education

Values		A.P.I.	Hometown	Sex					
				Male			Female		
People	Money			Negro	SES		Negro	SES	
					Low	High		Low	High
+	-	Low	Smaller	22 (72)	20 (896)	14 (634)	29 (93)	42 (364)	41 (388)
			Larger		16 (536)	10 (664)		38 (240)	38 (373)
+	-	High	Smaller	35 (81)	17 (790)	11 (788)	34 (80)	40 (617)	36 (928)
			Larger		12 (591)	8 (1,102)		32 (410)	32 (1,056)
+ -	+ -	Low	Smaller	9 (149)	9 (1,627)	6 (1,137)	41 (104)	36 (292)	20 (318)
			Larger		9 (1,041)	4 (1,298)		29 (152)	35 (292)
+ -	+ -	High	Smaller	8 (109)	9 (1,333)	4 (1,339)	20 (66)	32 (435)	27 (591)
			Larger		3 (1,213)	3 (2,095)		21 (292)	18 (903)
-	+	Low	Smaller	- (9)	8 (506)	5 (381)	- (13)	- (21)	- (26)
			Larger		3 (368)	2 (478)		- (48)	- (46)
-	+	High	Smaller	- (47)	2 (444)	2 (406)	- (9)	29 (63)	12 (104)
			Larger		2 (391)	0 (717)		- (39)	13 (139)

N =	29,744
Freshmen Choosing Education	10,861
NA, Not Included	16,059
Total Weighted N =	56,664

in the smaller cities, since when hometown (in a table not reported here) is controlled, the difference disappears.

The SES and hometown differences are not striking, but when taken in combination, do produce fairly important differences. Considering, as an example, low API men with the Education-prone values of high people, low money, we find 34 per cent of the smaller city, low SES freshmen choosing Education in contrast to 13 per cent among larger city high SES students; and 20 per cent recruitment rates for the former in contrast with 10 per cent among the latter.

Having reviewed the correlates of freshman choice and changes during college, it is now possible to assemble together the complete set of characteristics which distinguish seniors choosing Education from June, 1961 graduates in general. Table 4.1 h) shows the simultaneous contributions of sex, API, values, SES, size of hometown, and race in a single prediction table.

It is seen that each factor produces a difference. Sex and values are obviously the most important discriminants but within each sex and value group, lower API is associated with Education and within each group formed from combinations of sex, values, and API there is generally a difference of around 15 per cent between the high SES, larger city students and the low SES, smaller city students. At the extremes 75 per cent of the smaller city, low SES, low API girls with high people, low money values expect careers in Education, while among larger city, high SES, high API males who are high on money and low on people, one per cent is aiming for pedagogy.

A rough measure of the importance of a particular characteristic is given by the percentage difference in the dependent characteristic associated with it. Since 37.6 per cent of the students from smaller cities are going into Education in comparison with 27.4 of those from larger cities, the zero order percentage

TABLE 4.1--Continued

h) SES, Hometown, and Senior Choice of Education, by Sex, A.P.I., Values, and Race

(Per cent Choosing Education)

Sex	Values		A.P.I.	Race				
				White				Negro
				SES				
				High		Low		
				Hometown				
	People	Money		Large	Small	Large	Small	
Female	+	-	Low	64 (781)	70 (910)	67 (547)	75 (1,083)	57 (130)
			High	57 (1,977)	63 (1,873)	61 (868)	69 (1,422)	52 (128)
	±	±	Low	51 (444)	46 (529)	59 (290)	67 (637)	62 (183)
			High	35 (1,243)	48 (947)	52 (518)	56 (817)	54 (156)
	-	+	Low	31 (74)	47 (49)	42 (67)	63 (51)	- (19)
			High	24 (188)	33 (139)	38 (50)	48 (99)	- (27)
Male	+	-	Low	19 (760)	26 (791)	33 (707)	42 (1,367)	44 (113)
			High	14 (1,196)	20 (917)	26 (752)	36 (1,070)	38 (97)
	±	±	Low	6 (1,360)	13 (1,268)	16 (1,168)	22 (2,031)	31 (204)
			High	5 (2,169)	8 (1,427)	8 (1,301)	16 (1,546)	32 (151)
	-	+	Low	2 (481)	5 (385)	9 (397)	13 (571)	27 (51)
			High	1 (734)	2 (412)	4 (403)	5 (468)	- (12)

N = ... 39,284
Negro 1,321
NA, Not Included 16,059

Total Weighted N = ... 56,664

difference in Education for size of hometown is 37.6 - 27.4 or 10.2. In tables based on simultaneous cross-tabulation of several items, a given characteristic will have a number of percentage differences. In Table 4.1 b), for example, the hometown size difference in Education is six per cent among high SES, low API girls who are high on people and low on money; 10 per cent among low SES, high API men who are high on people and low on money, etc., etc. In order to arrive at an over-all figure one may average all the percentage differences in the table. However, because of item frequencies and intercorrelations, the various percentage differences will be based on different numbers of cases. In order to give more weight to differences which are characteristic of larger groups of students and to avoid giving undue weight to unreliable differences based on small numbers, the percentage differences were weighted by the case base involved and no percentage was included where either of the two groups was based on less than 50 cases (TWS). The procedure was as follows: a) Each difference was multiplied by the total number of cases in the two comparison cells, b) the resultant figures were summed algebraically (i.e., positive differences were *added*, negative ones subtracted) and c) the total was divided by the total number of cases in the comparisons. We will term the resultant figure the weighted net percentage difference.

Percentage Differences for Education

Item	Zero Order	Weighted Net
Sex (Female - Male)	41.5	38.6
Values (People, Not Money - Not People, Money .	36.4	23.0
SES (Low - High)	7.3	8.9
Hometown (Smaller - Larger) .	10.2	6.4
API (Low - High)	2.8	6.0

By this criterion sex and values are the important predictors, although SES, hometown, and API still make consistent differences when all other items have been controlled.

The data analysis may be concluded by considering two additional questions, the relationship between these variables and turnover, and comparisons with particular occupations.

Because the five variables listed in the table produce consistent and fairly strong percentage differences in Education, it is interesting to return to the question of growth and decline as discussed in the previous chapter. We have seen that more students shift into Education than shift out of it, for the sample in general, and when Education is compared with other particular fields. Since propensity to choose Education is so strongly associated with these personal characteristics perhaps we can explain the "growth" of Education in terms of the high proportion of college graduates who possess traits favorable to the choice of Education. The test of this idea lies in finding a type of student for whom a net loss in educators can be shown. If this can be done, it seems fair to attribute at least part of the growth of Education to the proportion of graduates falling in "net gain" types as compared with the proportion with "net loss" characteristics.

Looking down in the lower left hand corner of Table 4.1 h) we see the types of student with the lowest propensity toward Education. In the lower left hand corner we find a cell with one per cent of 734 cases planning to enter Education; above and to the right we find two cells with a two per cent figure; and near them four cells with five or four per cent entry rates.

Calculation of the turnover index (recruits divided by recruits plus defectors) for groups of cells with low Education percentages gives the following:

Cells with given per cent Entering Education	Turnover Index	N
1%	20	10
2%	72	25
4 and 5	71	141

Remembering that an index value greater than 50 means net growth, we see that in the least Education-prone of the 57 cells in Table 4.1 h) (high API, high SES, larger city men, high on money, low on people) there is a net loss, but this is based on only 10 weighted cases and is hardly reliable. For the other anti-Educational groups there is considerable net gain. In short, even among the groups who show the very least inclination toward Education, there is a net growth in choice of Education. Thus, for all practical purposes, every type of student (in terms of our background variables) shows a net trend toward Education over the four years of college.

Having reviewed the ways in which students opting for educational careers differ from the graduating class in general, let us consider briefly differences between seniors choosing Education and those choosing other particular career fields. Table 4.1 i) summarizes all the comparisons in which educators have a 10 per cent surplus or deficit in particular characteristics when compared with other fields. A number of differences are worth noting:

1) Education, as one would expect, is not only quite feminine, it is the feminine field, having more women than any of the other fields.

2) Educators' interest in working with people is higher than any other field, except Medicine.

3) The smaller city origins of educators hold in specific comparisons except that there is no 10 per cent difference for Biological Sciences or Other Professions.

4) While there is no field 10 per cent lower in SES in comparison with Education, the proportion of high SES students in Education is within 10 per cent of the proportions in Other Professions, Engineering, Business, and Physical Sciences.

5) Engineering, Business, Physical Sciences, and Law stand out as distinctly more money-oriented than Education, and there is no distinctly less money-oriented field.

TABLE 4.1--Continued

i) Characteristics Showing a 10 Per cent or Greater Difference Between Education and Other Fields

Characteristic	Field								
	Other Profs.	Bio. Sci.	Engin.	Bus.	Phy. Sci.	Soc. Sci.	Hum.	Med.	Law.
Sex - Male	-	-	-	-	-	-	-	-	-
Values - People	+	+	+	+	+	+	+		+
Hometown - Larger . . .			-	-	-	-	-	-	-
Values - Original . . .			-	+	-	-	-		
SES - High		-				-	-	-	-
Values - Money			-	-	-				-
A.P.I. - High					-	-	-	-	
Religion - Protestant .				+				+	+
Jewish . . .								-	-
Catholic . .									-

+ = the per cent of seniors in Education possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

6) Although the API levels in Education are about the same as graduates in general, Education has lower API's than Physical Sciences, Social Sciences, Humanities, and Medicine, but it is not distinctly lower than any of the other fields.

7) Although religion is not strongly related to Education, it is strongly related to Medicine, Law, and Business, so that educators are more Protestant than businessmen, physicians, and lawyers; less often Jewish than physicians and lawyers, and less often Roman Catholic than lawyers.

Certain comparisons with particular occupations are also of interest:

1) Educators and physicians have fairly similar value patterns (the service motivation), for Medicine is the only field which is within 10 per cent of Education on all three dimensions. It is sex, API, and social origins which differentiate educators from doctors.

2) Except for sex and interest in people, educators are much akin to those in the Other Professions.

3) In a sense, educators and lawyers are the least akin, differing by 10 per cent or more on eight of the characteristics.

We can now state, in summary form, the findings on the social characteristics associated with choice of Education as a career:

1) Femininity is the outstanding characteristic of Education. Education is the most "female" occupation, and holding constant all the other characteristics, being a woman is still strongly associated with freshman choice, retention, recruitment, and senior choice of this field.

2) A service value orientation, defined by wanting to work with people rather than things and not wanting to make a lot of money is the second distinguishing trait of educators, a position they share to some extent with future physicians. Like sex, the value pattern produces regular differences in freshman choice, retention, recruitment, and senior choice with other variables held constant.

3) Although in comparison with the total graduating class educators are no lower on academic performance, and differ by 10 per cent in API only in comparison with Medicine, Physical Sciences, Social Sciences, and Humanities, women get better grades than men, and when sex is held constant a negative

difference appears. Within sexes, lower API's are associated strongly with freshman choice of education, moderately associated with recruitment to Education, and very slightly associated with retention in Education. At graduation there is a weighted average difference of 6.0 per cent in choice of Education between high and low API students.

4) In terms of social origins, lower SES and smaller hometowns both contribute independently to choice of Education, educators showing a 10 per cent difference on one or both in comparison with every other field except Other Professions. These characteristics are fairly strongly related to freshman choice, moderately related to recruitment, but not consistently associated with retention. At graduation, within a grouping homogeneous on sex, values, and API, the differences in the per cent entering Education between low SES and smaller city and high SES, larger city vary from 10 to 35 per cent.

What seem to be the implications of these findings for understanding the recruitment of school teachers?

The findings on sex appear "obvious" but their importance should not be minimized. The sex difference can be expressed as a loss of potential men teachers, but perhaps is better viewed as a semi-monopoly on women. So long as the biological sex ratio stays near 50-50 and women continue to have high college attendance rates, a large supply of future teachers is assured. Although the "teacher shortage" is an important one, competition is increasing in all fields, and the femininity of Education may well protect it from raids by other occupations. Since in addition, the femininity of Education tends to raise its API levels and to increase the proportion with service values, we feel that there is no bad news in these correlations. Perhaps the problem of Education is not recruitment of men, but mechanisms for encouraging women, particularly married women, to continue in the field.

Similarly the findings on values may be read as reassuring. Despite the complaints about the materialism and "selfishness" of American youth, this sample has large numbers of students with service values. Thus, even among high API men, a relatively achievement-oriented group, one-third (31.3 per cent) fall in the high people, low money group, as do 31.6 per cent of the low API men, 59.6 per cent of the high API women, and 59.3 per cent of the low API women. For such service-oriented students, particularly those who lack the high level of academic potential necessary for professions such as Medicine or Arts and Science fields, Education provides a very appropriate occupation. It may well be that Business, the major professions, and the Arts and Science fields have more glamour than Education, but a large number of students appear to lack the high achievement drive which is associated with choice of these fields, and to have value patterns particularly appropriate for Education.

Because there is considerable concern about Education, it is important to put the findings on API in perspective. We hope that, although it is clear that lower academic achievement is associated with choice of Education, the finding will not be seized out of context to forge an indictment. It is necessary to also bear in mind the following: a) Because of the large number of women in the field, over-all Education gets a reasonable cross-section of API levels, the negative effect being only within sex. b) Because four years of college represents considerable selection, there is no reason to believe that the bottom half of college graduates are not academically strong enough to teach grade school and high school--if they have been trained in the appropriate content, c) It is not clear that the very top students would be particularly good teachers, nor is it clear that the diversion of the academic elite from Arts and Science and Medicine into Education would serve the over-all interests of the nation. d) The lack of an association with "original and creative" suggests that there is no selection on _anti_-intellectual values.

None of this is to say that it is desirable to channel the dumbbells into Education or that the intellectual level of the average faculty teaching Education at the college level is outstanding. However, it should be noted that values and sex are much more important than API in recruitment to Education and that although the intellectual cream is clearly not opting for primary and secondary teaching, there is no evidence that the current situation represents an intellectual disaster for future children.

The SES and city size correlations are less "obvious" than the differences for sex, API and values. Why they obtain is not known. A number of hypotheses come to mind. Regarding SES, the difference could be explained by a perceived "low status" of teaching, such that it is "outside the pale" for high SES students, and a "step up" for low SES students, but if so, one would expect the SES difference to be mostly among men, while in fact it is characteristic of both sexes. Perhaps the cost of graduate training for other fields steers low SES students into Education as a field with easy entree. Perhaps too, the lower SES students are more often steered into public colleges where courses in Education are more often stressed. Again, with city size, does the difference come because big city public schools have a "negative image," because Education is a relatively more visible occupation in smaller towns, because students from smaller cities are more likely to attend schools which stress teacher training, or for other reasons? Additional research, as this project continues, will be necessary to explore these questions.

Business

While careers in business and related fields (finance, advertising, personnel, etc.) are not among the occupations selected for special attention in the survey, it is important to understand recruitment to business careers for comparison purposes. Because business is a popular field (18 per cent of the total sample anticipate it as a future career) and one which increases considerably between freshman and senior year, a number of questions arise. In a business-oriented society are students being siphoned off from science and professions to enter commercial fields or alternately are these occupations a residual choice for students who fail to meet the academic requirements for other fields? Do particular subgroups in the society send more than their share of progeny into the arena of commerce?

The findings on choice of Business are summarized in Table 4.2 a).

Beginning with the zero order Q coefficients, it appears that at graduation, future businessmen are distinguished from the generality of graduates on six of the eleven characteristics. They are distinctively male, interested in making money, non-Negro, less oriented toward originality, lower in academic performance, and disproportionately Catholic, these same items being more or less similarly associated with freshman choice, retention and recruitment.

The occupational value wheel provides a good framework for putting all these pieces together, for one of the outstanding characteristics of businessmen is their distinctive value pattern. Table 4.2 b) shows the relationship between value type and freshman choice of business careers. It is clear that these choices are clustered around 3 o'clock in the two patterns, money only and money and people. Similarly, there is a deficit of businessmen in the people and original and original only sectors. In sum, an interest in making money along with a disinterest in opportunities to be original and creative are the distinctive interest patterns of the aspirant businessman. Working with people appears to make no consistent difference.

Because original and creative is a popular item (51 per cent of the sample endorsed it) and making a lot of money is a less popular item (24 per cent endorsement) the combination of responses which is most "businesslike" is actually quite rare in the sample. Eleven per cent (TWS) circled this particular combination. Granted that frequencies for data such as these are heavily influenced by question wordings, the fact that 65 per cent of the students (RSS) circled as important for picking

TABLE 4.2

CORRELATES OF CAREER CHOICE OF BUSINESS

a) "Q" Coefficients for Career Choice of Business

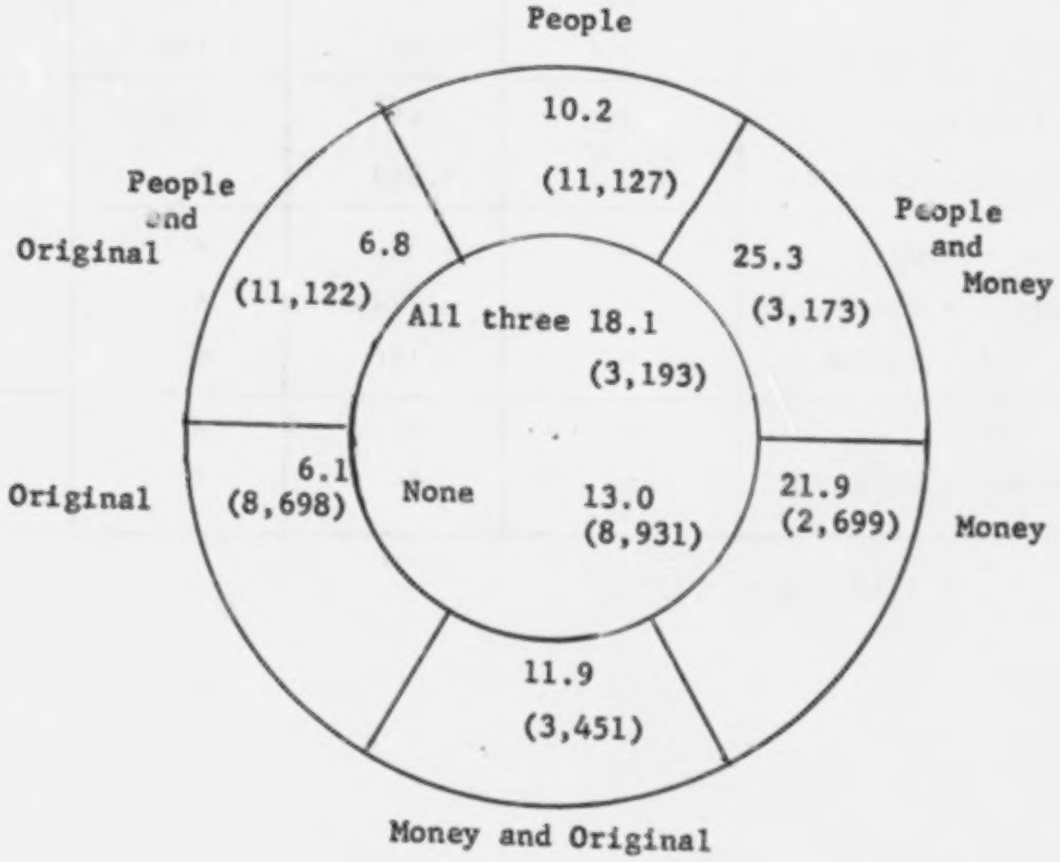
Variable	Freshman	Retention	Recruitment	Senior
Sex - Male	+.521	+.580	+.652	+.673
Values - Money . . .	+.430	+.490	+.572	+.574
Race - Negro	-.398	*	-.638	-.516
Values - Original .	-.304	-.151	-.198	-.277
A.P.I. - High . . .	-.233	*	-.272	-.262
Religion - Catholic.	+.151	+.243	*	+.173
Values - People . .	*	-.182	*	*
Religion - Protestant	*	-.274	*	*
Jewish .	*	-.180	*	*
SES - High	*	*	*	*
Hometown - Larger .	*	*	*	*

* = +.15 > Q > -.15

TABLE 4.2--Continued

b) Values and Career Choice of Business

(Per cent Freshmen Choosing Business)



N =	52,394
NA Field	3,147
NA Values	1,015
NA Both	108
Total Weighted N =	56,664

a job or career "opportunities to be helpful to others or useful to society," and that more students circled "living and working in the world of ideas" than circled "making a lot of money" should lead us to question those critics of youth who maintain that college students are "materialistic," "self-centered," and saturated with the "marketing mentality."

Men, particularly those low on API, are more likely to endorse business values [Table 4.2 c)]. Seventeen per cent of the low API men are high on money and low on original and creative in contrast to 5.5 per cent of the high API women. It is thus necessary to control values in considering the relationships between sex and API and choice of Business. Considering sex, API, and values simultaneously [Table 4.2 d)] the following inferences may be drawn:

The masculinity of Business is quite independent of API and occupational values. For freshman choice, retention, and recruitment, men are more likely to choose Business when matched with girls with similar values and API. For example, among low API students high on money and low on original, 32 per cent of the men starting in other fields had switched to Business at graduation, in contrast with six per cent of women in the same API and value grouping.

The relationship between low academic performance and choice of Business is much less consistent when sex and values are controlled. While more comparisons show a low API trend toward Business than a high API one, the results are far from consistent, and it is only for recruitment among males that low API students consistently opt for commercial fields. The fact remains that future businessmen have lesser records of academic performance, but behind this fact lies the lesser API levels of men and students with occupational values conducive to Business, not an independent tendency for brighter students to shy away from Business.

TABLE 4.2--Continued

c) Sex, A.P.I., and Business Values

(Per cent High Money, Low Original)

Sex	A.P.I.	
	High	Low
Male . . .	12.0 (14,224)	16.9 (13,115)
Female . .	5.5 (11,832)	6.9 (6,797)

N = ... 45,968
NA Freshmen - Future Career 9,573
NA Values - A.P.I. 1,123
Total Weighted N = ... 56,664

TABLE 4.2--Continued

d) Sex, A.P.I., Values, and Choice of Business

I. Per cent of Freshmen Choosing Business

Values		Sex			
		Female		Male	
		A.P.I.		A.P.I.	
Money	Original	High	Low	High	Low
+	-	17.3 (653)	14.7 (468)	30.0 (1,706)	29.2 (2,216)
±	±	6.2 (5,482)	7.7 (3,694)	16.1 (6,787)	19.9 (7,168)
-	+	2.6 (5,697)	5.8 (2,635)	7.5 (5,731)	12.5 (3,731)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

II. Per cent Defecting Among Freshmen Choosing Business

Values		Sex			
		Female		Male	
		A.P.I.		A.P.I.	
Money	Original	High	Low	High	Low
+	-	34.5 (113)	17.4 (69)	10.4 (512)	12.7 (647)
±	±	52.9 (340)	46.5 (286)	21.4 (1,091)	23.2 (1,429)
-	+	62.6 (147)	71.9 (153)	36.1 (432)	29.8 (466)

N = ... 5,685

III. Per cent of Freshmen in Other Fields Recruited to Business

Values		Sex			
		Female		Male	
		A.P.I.		A.P.I.	
Money	People	High	Low	High	Low
+	-	7.2 (540)	5.5 (399)	23.4 (1,194)	31.7 (1,569)
±	±	3.7 (5,142)	3.4 (3,408)	12.4 (5,696)	15.5 (5,739)
-	+	1.9 (5,550)	2.5 (2,482)	5.2 (5,299)	10.0 (3,265)

N = ... 40,283

The vigorous academic discussions of "The Protestant Ethic" as well as general concern with religious and racial barriers in America impel us to give careful consideration to the part that background characteristics play in the choice of Business careers and to consider whether students from particular sub-cultures show special proclivities and resistances to these careers.

Considering first the zero order relationships, race and religion seem to make some difference, although SES and hometown do not generate substantial associations. Table 4.2 a) tells us that Negroes are less likely to choose Business as freshmen, less likely to be recruited to Business, and at graduation are quite unlikely to be in these careers (Q = -.516). Less strikingly, but with some consistency, Roman Catholic students show a positive attraction to Business with low positive Q's for freshman choice, retention, and senior choice.

Table 4.2 e) enables us to examine the simultaneous effects of race and religion, controlling for sex and occupational values. The results are mixed. To begin with, none of the ethnic differences hold with any consistency among women. Among men, however, the differences tend to hold up, although not without exceptions. Comparing Negroes with white Protestants, the lesser frequency of freshman choice and recruitment is borne out in every comparison, although the case bases are too small for analysis of retention of Negroes in Business. Turning to religion and comparing Catholics and Protestants among the men, except for recruitment among those with Business values, the greater Catholic choice of Business is substantiated by small but consistent percentage differences. As for the Jews, whose commercial proclivities have been long celebrated, no clear pattern emerges. In terms of freshman choice among men, Jews choose Business somewhat less frequently than Catholics but no less than Protestants; considering defections,

TABLE 4.2--Continued

e) Race, Religion, Sex, Values, and Choice of Business

I. Per cent of Freshmen Choosing Business

Sex	Values		Race			
	Money	Original	Negro	White		
				Religion		
				Protestant	Jewish	Catholic
Male	+	-	0 (72)	27.2 (1,889)	30.2 (414)	35.1 (1,144)
	±	±	5.6 (380)	17.2 (7,433)	19.4 (1,128)	22.4 (3,480)
	-	+	4.0 (176)	9.2 (5,241)	8.8 (715)	12.2 (2,237)
Female	+	-	15.5 (58)	19.7 (553)	11.3 (71)	13.8 (318)
	±	±	9.1 (441)	7.3 (5,064)	6.4 (488)	6.1 (1,931)
	-	+	2.1 (194)	4.3 (4,847)	2.5 (753)	3.2 (1,578)
Total			6.2 (1,321)	11.8 (25,027)	13.0 (3,569)	15.6 (10,688)

N = ... 40,605

NA, Not Included 16,059

Total Weighted N = ... 56,664

TABLE 4.2 e)--Continued

II. Per cent Defecting Among Freshmen Choosing Business

Sex	Values		Race							
	Money	Original	Negro		White					
					Religion					
					Protestant		Jewish		Catholic	
Male	+	-	-	(0)	13.1	(513)	8.8	(125)	9.7	(401)
	±	±	-	(22)	25.4	(1,281)	19.6	(219)	19.1	(779)
	-	+	-	(7)	37.1	(480)	33.3	(63)	24.1	(274)
Female	+	-	-	(9)	35.8	(109)	12.5	(8)	18.2	(44)
	±	±	50.0	(40)	52.6	(371)	45.2	(31)	37.3	(118)
	-	+	-	(4)	65.2	(207)	57.9	(19)	78.4	(51)
Total			29.3	(82)	31.7	(2,961)	21.7	(465)	20.8	(1,667)

N = ... 5,175
Freshmen Not Choosing Business 35,430
NA, Not Included 16,059

Total Weighted N = ... 56,664

TABLE 4.2 e)--Continued

III. Per cent of Freshmen in Other Fields Recruited to Business

Sex	Values		Race			
				White		
				Religion		
	Money	Original	Negro	Protestant	Jewish	Catholic
Male	+	-	1.4 (72)	30.5 (1,376)	21.8 (289)	30.1 (743)
	±	±	2.8 (358)	14.7 (6,152)	11.1 (909)	15.7 (2,701)
	-	+	0.6 (169)	6.9 (4,761)	3.8 (652)	9.6 (1,963)
Female	+	-	0.0 (49)	9.2 (444)	4.8 (63)	4.7 (274)
	±	±	4.0 (401)	3.6 (4,693)	5.5 (457)	3.4 (1,813)
	-	+	0.0 (190)	2.0 (4,640)	1.9 (734)	3.0 (1,527)
Total			2.2 (1,239	8.9 (22,066)	7.4 (3,104)	10.6 (9,021)

N = ... 35,430
Freshmen Choosing Business 5,175
NA, Not Included 16,059

Total Weighted N = ... 56,664

their loss rates are lower than Protestants but higher than Catholics; and in terms of recruitment, Jews are the lowest of the three religions among whites.

One would need to separate out types of employment within Business, especially work for large companies versus self-employment before drawing firm conclusions, but it is fair to note an anti-Business trend among Negro men and a pro-Business trend among Catholic men, remembering, however, that sex and value differences are much more important as predictors. The avoidance of Business by Negroes appears intuitively understandable, for one would guess that the professions with their formal training requirements, liscensing procedures, tenure, and, in some governmental positions, legal protection against discrimination, provide more security and greater opportunities for advancement than the riskier business occupations. Whether the Catholic trend is similar is a more doubtful matter. A more detailed examination of the occupational choice of Catholic students by Andrew Greeley[2] supports the contention that it is attraction to large business which explains the Catholic differential, but the underlying factors are still murky.

The simultaneous contribution of all these factors--sex, API, values, race, and religion, toward the differentiation of seniors planning careers in Business when compared with the total graduating class is seen in Table 4.2 f). In the upper right-hand corner of the table are shown the most commercially-oriented group, low API, Catholic men high on money and low on originality, 54 per cent of whom anticipate business careers. In the lower left hand corner, are found the least businesslike, high API Negro women low on money and high on originality, of whom one per cent anticipated careers in commerce.

It is interesting to note, however, what little difference religion, race, and API make among the women. Except for the value items, the other variables tend to wash out among

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[2] Cf. Andrew M. Greeley, "The Influence of Religion on the Career Plans and Occupational Values of June 1961 College Graduates." Unpublished dissertation, Department of Sociology, University of Chicago, June, 1962.

TABLE 4.2--Continued

f) Sex, Values, A.P.I., Race, Religion, and Senior Choice of Business Career
(Per cent Choosing Business)

Values		A.P.I.	Sex					
			Female			Male		
			Race			Race		
			Negro	White		Negro	White	
				Religion			Religion	
Money	Original			Prot. & Jew.	Catholic		Prot. & Jew.	Catholic
+	-	Low	- (24)	18.4 (250)	11.3 (133)	0 (55)	47.2 (1,257)	53.7 (673)
		High	- (34)	20.1 (374)	18.4 (185)	- (17)	43.0 (1,046)	47.8 (471)
+ +	- -	Low	5.9 (253)	8.1 (2,122)	8.6 (765)	8.4 (214)	26.7 (4,228)	33.3 (1,893)
		High	11.2 (188)	6.4 (3,430)	5.9 (1,166)	7.8 (166)	23.3 (4,333)	26.7 (1,587)
-	+	Low	0 (105)	3.8 (1,674)	5.4 (518)	7.1 (99)	16.0 (2,229)	23.0 (1,00[illegible])
		High	1.1 (89)	3.1 (3,926)	2.7 (1,060)	1.3 (77)	9.1 (3,727)	13.4 (1,231)

N = ... 40,605

NA, Not Included 16,059

Total Weighted N = ... 56,664

females, whose anti-business trends are so strong that the presence or absence of other traits makes little difference. Even among women with the business values less than 20 per cent are aiming for careers in these fields.

The relative effects of different factors can be seen by the use of weighted net percentages, computed separately by sex.

Weighted Net Percentage Differences
for Business

Item	Difference	Among Men	Among Women	Total
Sex	Men - Women			16.5
Values*	I - II	20.3	11.4	
	II - III	12.4	3.5	
Race & Religion	Negro-White Protestant & Jewish	-16.1	-1.6	
Religion	Catholic-Protestant & Jewish	5.2	0.0	
A.P.I.	Low - High	5.5	1.2	

* I = Money, Not Original; II = Money and Original; Not Money and Not Original; III = Not Money, Original.

The weighted average differences confirm our impressions: that values produce the biggest difference, that among men Negroes are unlikely to choose Business, while Catholic and low API men show a trend toward commerce, that women are quite unlikely to go into Business and that among women variables other than values have little or no effect. The table does, however, add the impression that among women even values makes less difference, for the percentage differences for values are much less among the women students.

Although the cumulative effect of these predictors is considerable, as in the case of Education these characteristics cannot explain the net trend toward Business in the sample. High API women with low money and high original values show a very, very low interest in Business careers. Nevertheless, within this group there is a slight net increase in Business careers between freshmen and senior choices (Turnover Index = 54.0, N = 200). Clearly the masculine majority among the graduates and the one out of four students who is interested in making a lot of money are important for the net growth, but the fact that choice of Business increases in all subgroups means that our variables will not go far toward explaining the rise in terms of the type of students graduating from college.

Having contrasted the businessmen with the generality of graduates, we can conclude the analysis by considering the items which differentiated students aiming for Business from those aiming for other particular fields [Table 4.2 g)].

As would be expected from the previous materials, businessmen stand out as rather different, being differentiated from each other field by four or more items. Some of the more interesting comparisons may be briefly noted:

> 1) Except for API, Business and Education are close to being opposites, there being a 10 per cent difference between them in sex, people, money, original, city size, and Protestantism.
>
> 2) Businessmen are most like lawyers in values in the sense that unlike other fields there are no 10 per cent differences between Law and Business in values. What does differentiate the two is API, SES, and religion, lawyers having high API's, coming from higher SES families and being more often Jewish.
>
> 3) Although it has been reported that there is a very high flow of students from Engineering to Business, the two fields are quite different, engineers differing by 10 per cent or more on all three value items, being lower in SES and even more male than those choosing Business.

To summarize:

1) Business is a masculine field, men being more likely to choose Business as freshmen, to remain with a freshman choice of Business and to be recruited into the field, regardless of other characteristics. Furthermore, among the women other variables show a lesser relationship to choice of Business.

TABLE 4.2--Continued

g) Characteristics Showing a 10 Per cent or Greater Difference Between Business and Other Fields

Characteristic	Fields								
	Educ.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law.	Phy. Sci.	Med.	Engin.
Sex - Male.	+	+	+	+	+				+
A.P.I. - High		-	-	-		-	-	-	
Values - People . . .	-			+			+	-	+
Money . . .	+	+	+	+	+		+	+	+
Original . .	-	-	-	-			-		-
SES - High						-		-	+
Hometown - Larger . .	+				+				
Religion - Protestant	-				-	+			
Catholic .									
Jewish . .						-		-	

+ = the per cent of seniors in Business possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

2) Two occupational values, a greater choice of "making a lot of money" and a lesser choice of "opportunities to be original and creative" characterize choice of Business at each decision point. Even though, factually speaking, medical and some scientific careers may offer greater average incomes, the money-oriented students are clearly opting for Business, and while many aspects of finance and administration provide challenges to intellectual creativity, the originality-oriented students tend relatively to shun commerce. This value configuration is, however, relatively infrequent in the sample.

3) Although generally, lower academic performance is associated with freshman choice of Business, and recruitment, when sex and values are controlled, the effect is lessened considerably. Nevertheless, at graduation, seniors expecting to enter Business are lower on API in most comparisons.

4) Among male students, Negroes are distinctly less attracted to Business careers, and Catholic students show a pro-business trend when compared with Protestants and Jews.

5) Even in the groups with the lowest proportions going into Business, the field shows a net increase between freshman and senior years.

6) Interest in people, SES, and hometown are not importantly related to choice of Business careers.

Social Sciences

Having examined Education and Business, we have actually covered the career choices of half the students (51.9 per cent), the remaining eight professional fields being considerably smaller. Because of the focus of this research on the scientific and academic fields, however, even the smallest of the remaining fields, Social Sciences, will be described in detail. It is fair to note the increasing demands for social scientists in college teaching, mental health work, government research, and overseas activities to justify considerable interest in recruitment to these fields.

Remembering from Chapter III that Social Sciences is the one field grouping showing discontinuity and high rates of change, it is not easy to synthesize the materials. Since these fields have extremely high loss rates, high gain rates, and the items which distinguish freshman choice differ from those associated with decisions during college, the story is a complex one, but as usual it begins with the Q coefficients [Table 4.3 a)].

API is the only variable distinguishing social scientists across the four categories of Q's, those aiming for Social Sciences being more often better scholars. It is thus necessary to control for API routinely in considering other variables, beginning with values [Table 4.3 b)].

Examining freshman choices in fields such as Political Science, Psychology, Economics, and Sociology, it appears that there is some concentration in the "service" sectors of the wheel. The same value configurations which were predictive of choice of Education are associated with freshman choices in Social Sciences, Q for people and freshman choice being +.233. However, our inference of discontinuity is supported by consideration of defections and recruits. Although only the high API group is large enough to consider, we note that the original only sector (around 7 and 8 o'clock) has a lower loss rate (42.8 per cent) than the service values of people only and people and original, which show losses of over 60 per cent. For recruits the "shift" is less pronounced, but it is seen that while people only had a higher per cent of freshmen choosing Social Sciences than did original only, for recruits, the rates are higher for the latter than the former. All these percentages are low, for this is a very small field, but our impression of pre-college recruitment on the basis of service values and college recruitment on the basis of intellectual values is substantiated.

When sex is taken into consideration [Table 4.3 c)] it turns out that Social Sciences is one of the few sexless, or perhaps better, sexually undifferentiated groups of fields. In terms of zero order relationships being a male is negatively related to freshman choice (Q = -.177) and positively related to retention and recruitment (Q = .239 and .183), but when API and values are controlled, the trends hold only among those high on API _or_ with

TABLE 4.3

CORRELATES OF CAREER CHOICE OF SOCIAL SCIENCES

a) "Q" Coefficients for Career Choice of Social Sciences

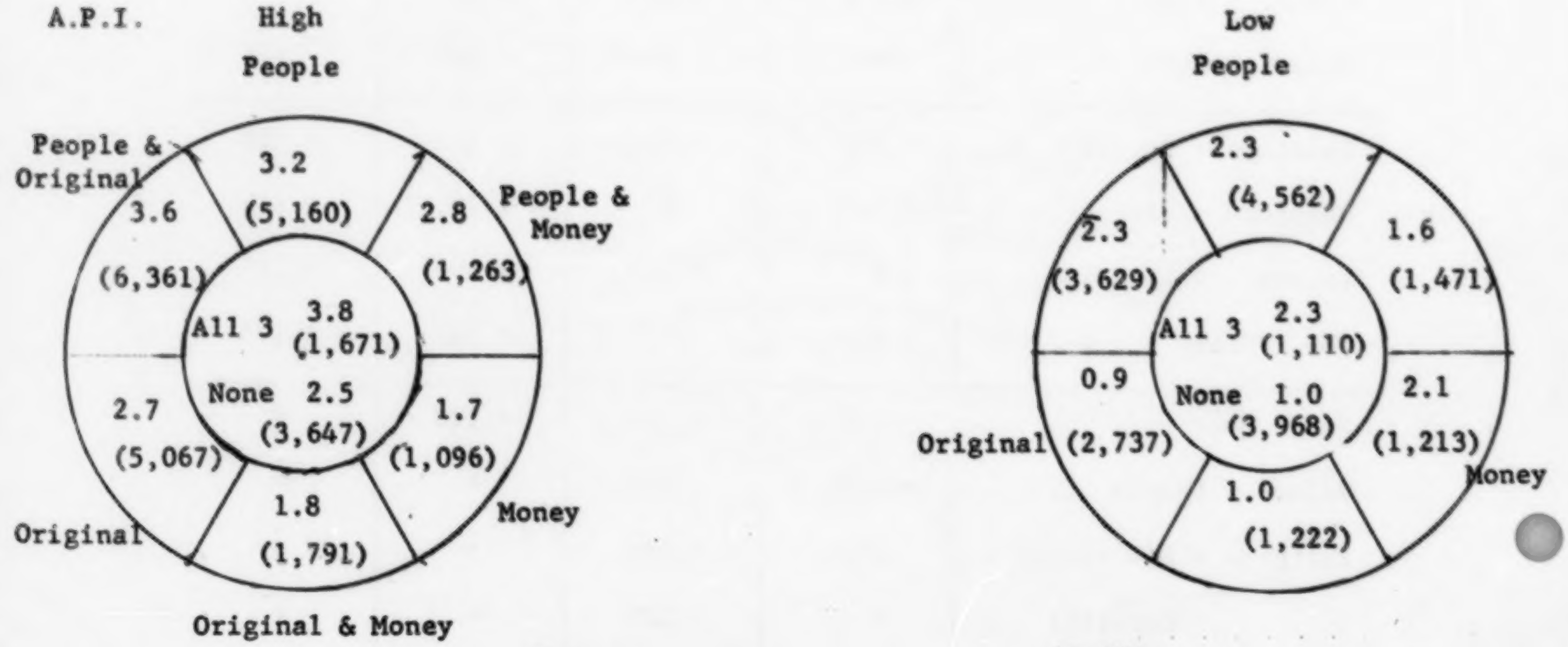
Variable	Freshman	Retention	Recruitment	Senior
A.P.I. - High	+.278	+.336	+.297	+.342
Values - Money	*	-.254	-.346	-.321
Religion - Jewish . . .	+.335	-.220	+.322	+.288
Hometown - Larger . . .	+.307	*	+.251	+.274
Values - Original . . .	*	+.160	+.205	+.197
SES - High	+.215	*	+.186	+.175
Sex - Male	-.177	+.239	+.183	*
Values - People	+.233	-.207	*	*
Religion - Protestant .	-.158	+.265	*	*
Catholic . .	*	-.187	*	*
Race - Negro	+.327	-.290	*	*

$^{*} = + .15 > Q > -.15$

TABLE 4.3--Continued

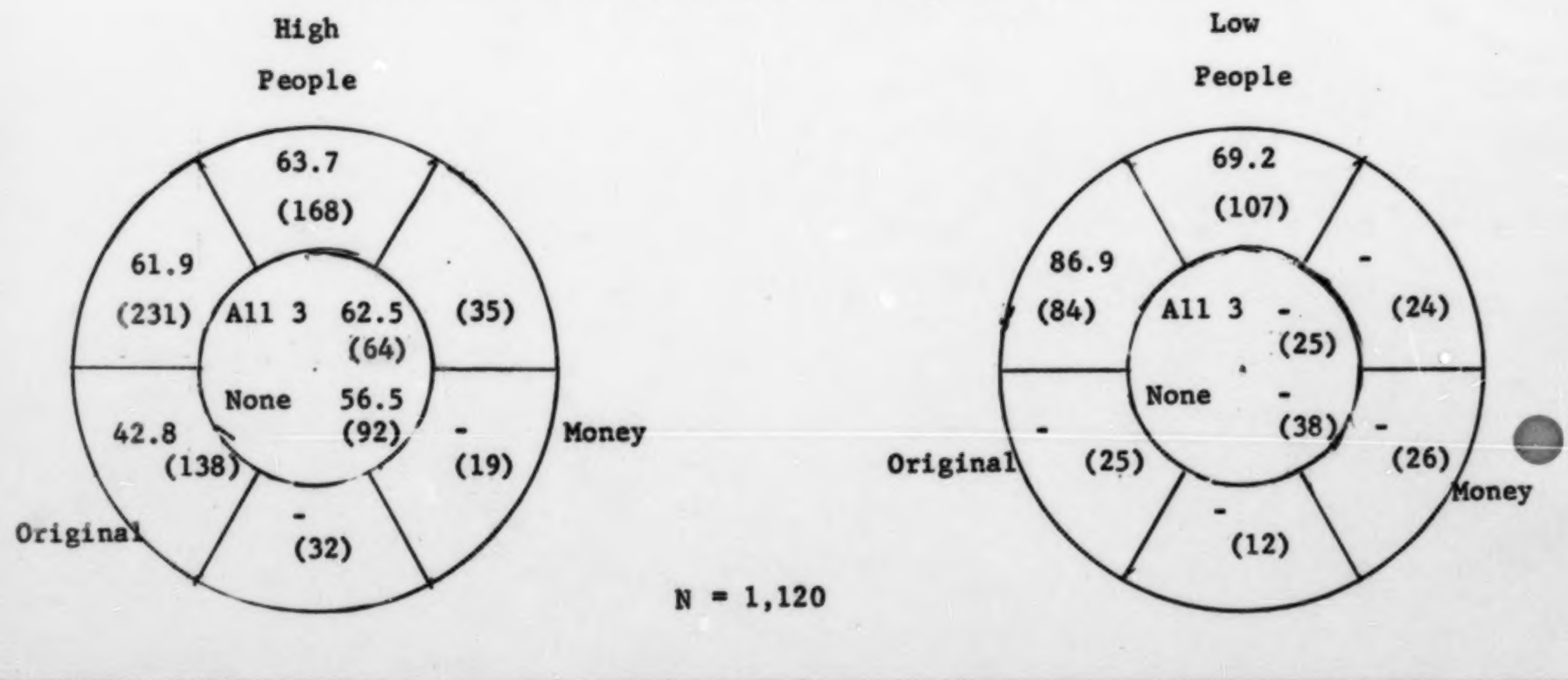
b) A.P.I., Values, and Choice of Social Sciences

I. Per cent of Freshmen Choosing Social Sciences


A.P.I.
High
People
People & Original
3.2
(5,160)
People & Money
3.6
(6,361)
2.8
(1,263)
All 3 3.8
(1,671)
None 2.5
(3,647)
2.7
(5,067)
1.7
(1,096)
1.8
(1,791)
Money
Original
Original & Money
Low
People
2.3
(4,562)
2.3
(3,629)
1.6
(1,471)
All 3 2.3
(1,110)
0.9
None 1.0
(3,968)
2.1
Original (2,737)
(1,213)
Money
1.0
(1,222)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

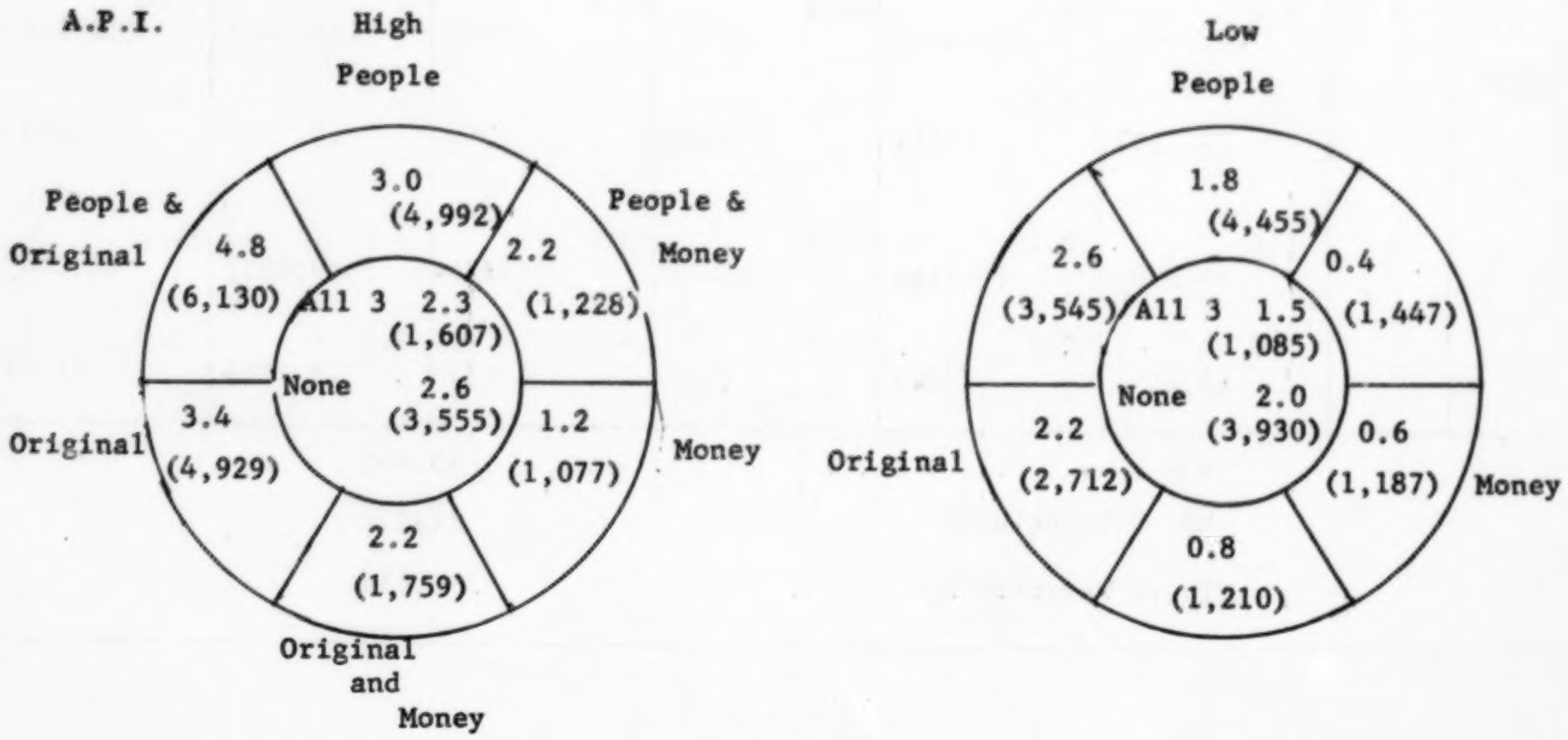
II. Per cent Defecting Among Freshmen Choosing Social Sciences


High
People
63.7
(168)
61.9
(231)
All 3 62.5
(64)
(35)
None 56.5
(92)
42.8
(138)
-
(19)
Money
-
(32)
Original
Low
People
69.2
(107)
86.9
(84)
All 3 -
(25)
-
(24)
None -
(38)
-
Original -
(25)
(26)
Money
-
(12)

N = 1,120

TABLE 4.3 b)--Continued

III. Per cent Recruited to Social Sciences Among Freshmen Choosing Other Fields



N = 44,848

TABLE 4.3--Continued

c) Sex, A.P.I., Values, and Career Choice of Social Sciences

A.P.I.	Values*	Freshmen		Defection		Recruitment	
		Male	Female	Male	Female	Male	Female
High	+	2.9 (11,065)	3.5 (10,841)	50.6 (316)	63.9 (377)	4.3 (10,749)	2.6 (10,464)
	-	1.5 (3,159)	3.8 (991)	- (48)	- (38)	1.7 (3,111)	2.7 (953)
Low	+	1.5 (9,830)	2.1 (6,176)	61.9 (147)	85.6 (132)	2.6 (9,683)	1.2 (6,044)
	-	1.8 (3,285)	0.5 (621)	84.7 (59)	- (3)	0.5 (3,226)	1.0 (618)

N = ... 45,968

NA, Not Included 10,696

Total Weighted N = ... 56,664

appropriate values, not for the group with low API's and inappropriate values, whose choice of Social Science is very infrequent regardless of sex. Because the sex trends are small and in opposite directions, at graduation there is no appreciable difference in sex composition between social scientists and graduates in general.

---

*Values

- = Money only, Money and People, and Money and Original.

+ = all other.

Turning now to the background characteristics, the possible relationships are of some interest. There is considerable folklore in the intellectual world that social scientists are disproportionately from lower SES levels and their upward mobility makes them detached from society; from larger cities whose swirling cosmopolitan life makes people curious about social phenomena; and Jewish, presumably because of the intellectual prominence of the Jews in general. Some, but not all of these ideas are substantiated. The case bases are too small to analyze freshman choice, recruitment, and retention separately, but because Social Sciences grow between freshman and senior years there are enough cases for senior choice to examine the interrelated variables of SES, city size and religion.

Quite independent of API and values, seniors choosing Social Sciences are more often from larger cities [Table 4.3 d)]. The percentages are small indeed, as are their differences, but the pattern is consistent and the weighted case bases are all over 2,000. The idea that the experience of living in a large community is conducive to interest in Social Science is a plausible one, but SES and city size are so strongly associated that both should be considered. Part II in Table 4.3 d) shows the simultaneous effects of size of hometown and SES, controlling for values and API. With one exception each contributes independently. Regardless of SES, choice of Social Science is associated with larger hometowns and regardless of hometown, the higher SES student (not lower as one might have predicted) is more often expecting a career in the Social Sciences. Since even among larger city, high API students from high SES families and appropriate values a mere

TABLE 4.3--Continued

d) Values, A.P.I., Hometown, SES, Religion, and Senior Choice of Social Sciences

(Per cent of seniors in Social Sciences)

I. Hometown

Values	A.P.I.	Hometown Larger	Hometown Smaller
+	High	6.0 (8,528)	3.5 (8,887)
+	Low	3.3 (4,960)	2.1 (7,471)
-	High	3.2 (2,870)	2.0 (2,250)
-	Low	1.4 (2,117)	0.7 (2,201)
Total . . .		4.3 (18,475)	2.5 (20,809)

N = ...	39,284
NA, Freshman or Future Career	9,573
NA Values and/or A.P.I. . .	1,123
NA Background	5,363
Negro	1,321
Total Weighted N = ...	56,664

II. SES

Values	A.P.I.	Hometown Larger SES High	Hometown Larger SES Low	Hometown Smaller SES High	Hometown Smaller SES Low
+	High	6.2 (5,520)	5.6 (3,008)	3.8 (4,521)	3.1 (4,366)
+	Low	3.4 (2,686)	3.1 (2,274)	3.0 (2,943)	1.4 (4,528)
-	High	3.2 (1,986)	3.3 (884)	2.4 (1,194)	1.6 (1,056)
-	Low	1.6 (1,215)	1.1 (902)	0.8 (989)	0.7 (1,212)
Total . .		4.5 (11,407)	3.9 (7,068)	3.1 (9,647)	2.0 (11,162)

N = ... 39,284

TABLE 4.3 d)--Continued

III. Religion

Values	A.P.I.	Hometown	SES	Religion	
				Jewish	Protestant and Catholic
+	High	Larger	High	7.8 (1,032)	5.9 (4,488)
			Low	10.3 (467)	4.7 (2,541)
		Smaller	High	6.1 (163)	3.7 (4,358)
			Low	- (33)	3.1 (4,333)
+	Low	Larger	High	6.5 (306)	3.0 (2,380)
			Low	5.1 (235)	2.8 (2,039)
		Smaller	High	- (53)	3.1 (2,890)
			Low	- (33)	1.4 (4,495)
-	High	Larger	High	2.8 (495)	3.3 (1,491)
			Low	1.2 (166)	3.8 (718)
		Smaller	High	1.4 (71)	2.5 (1,123)
			Low	- (19)	1.6 (1,037)
-	Low	Larger	High	2.5 (275)	1.3 (940)
			Low	2.0 (151)	0.9 (751)
		Smaller	High	- (60)	0.9 (929)
			Low	- (11)	0.7 (1,201)
	Total			5.6 (3,570)	3.1 (35,714)
		N = ... 39,284			

6.2 per cent are aiming for Social Sciences, we need not fear an inundation of social scientists with increasing urbanization and rising levels of living. Nevertheless, it is equally true that in each API and value group the larger city, higher SES student is twice as likely to choose Social Sciences as one from a low SES, smaller city background.

Finally, let us consider religion. Among white students, being Jewish is associated with freshman choice, recruitment and senior choice of Social Sciences, although the relationship with retention is negative. Since it has been shown that Jewish students are disproportionately larger city, high on SES and high academic performers, it may be that the religious difference is a spurious one. The final table in Table 4.3 d) shows the difference between Jews and Christians (Protestants and Catholics) controlling for values, SES, city size, and API. There is no longer any consistent religious difference when these controls are applied, but there is an interesting pattern. While Jewish students are not always more likely to choose Social Sciences, they are more likely to do so in the comparison groups which show generally higher interest in these careers and less likely to choose them in groups otherwise low on Social Sciences. Perhaps Jewish students are more sensitive to these background factors so that their rates are increased where the background factors are "favorable" and decreased where they are unfavorable. A more conservative conclusion, however, is that when controls are applied, there is no consistent religious factor in choice of Social Sciences, although because Jews possess the appropriate SES and city characteristics, they overchoose these fields.

Shifting our perspective now from percentage differences to the turnover analyses described in Chapter II, we can examine the net gain and loss for Social Sciences in the categories discussed. While Education and Business showed net gains for each of the groups produced by cross-tabulating the correlates, the net increase in Social Sciences between freshman and senior years is not so general [Table 4.3 e)]. Table 4.3 e) shows the absolute increase or decrease in cases for the cross-tabulations of values, API, SES, and city size. While there is no category showing substantial net loss, it is clear that the net increase in social scientists from freshman to senior years is almost all due to the group with "plus" values and particularly those among the plus value group who are high on API. Among the high API, "minus values" the net increase is only 23 cases (compared with 371 among the high API "plus value" group) and among the low API, "minus values" group there is a tiny loss of 16 cases. Reading down the columns of the same table it is seen that the SES and city size groups all show net increases, despite their association with choice. In other words, it is the large proportion of graduating students who are interested in people and/or originality and creativity who account for the net increase in Social Sciences between the freshman and senior year choices.

Because even in the most favorable groups less than 10 per cent of the seniors are planning to enter Social Sciences, a summary table of weighted net percentage differences is not very informative. It is, however, interesting to compare the social scientists with students entering other specific fields [Table 4.3 f)].

In terms of API, while high API's are a differentiating item for Social Sciences, Table 4.3 f) shows that physicians surpass them by 10 per cent or more and that students in Humanities, Law, and Physical Sciences are within 10 per cent of social scientists in percentage of high API students.

Regarding values, the social scientists are shown to fall between the service and the intellectual sectors. Compared with Education, there is a lesser interest in people and a greater interest in originality, but compared with Humanities, Social Scientists have a lesser interest in originality and a greater interest in people.

TABLE 4.3--Continued

e) Absolute Turnover in Social Science (Recruits Minus Defectors)

Values*	A.P.I.	Hometown				Total
		Larger		Smaller		
		SES		SES		
		High	Low	High	Low	
+	High	+146	+ 80	+ 89	+ 56	+371
	Low	+ 35	+ 34	+ 50	+ 42	+161
-	High	- 17	+ 9	- 1	- 2	+ 23
	Low	- 10	+ 1	- 3	- 4	- 16
Total . . .		+188	124	135	92	+539

*Defined in Table 4.3 c).

TABLE 4.3--Continued

f) Characteristics Showing a 10 Per cent or Greater Difference Between Social Sciences and Other Fields

Characteristic	Field								
	Educ.	Bus.	Hum.	Bio. Sci.	Other Profs.	Law.	Phy. Sci.	Med.	Engin.
Sex - Male	+	-	+	+	+	-	-	-	-
A.P.I. - High . . .	+	+		+	+			-	+
Values - People . .	-		+	+			+		+
Money . . .		-				-	-		-
Original .	+	+	-		+	+		+	
SES - High	+					-	+	-	+
Hometown - Larger .	+			+	+				+
Religion - Protestant .						+		+	
Catholic .						-			
Jewish . .									

+ = the per cent of seniors in Social Sciences possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

Although generally characterized by high SES and bigger city origins, social scientists show 10 per cent or greater differences on both of these only when compared with educators and engineers, and compared with Law and Medicine their SES levels are at least 10 per cent lower. They are distinguished from Biological Sciences and Other Professions by city size but not SES; from Physical Sciences by SES and not city size; and are within 10 per cent on both items when compared with Business and Humanities.

In summary:

1) Although the items associated with freshman choice are different from the items associated with decisions during college, so that there is less continuity in recruitment to Social Sciences, at graduation the students aiming for these careers are differentiated on six of the eleven items.

2) High academic performance is characteristic of students choosing Social Sciences for all stages of decision. At graduation, however, physicians have a definitely higher API level, although Social Sciences have a 10 per cent or greater advantage in high API students when compared with Education, Business, Biological Sciences, Other Professions, and Engineering.

3) Social Sciences are not differentiated in terms of sex at the time of graduation. Freshman women overchoose these fields, but during college men shift into them and men are more often retained in the field so that at graduation there is no substantial sex difference. Although being in the middle, Social Sciences are distinctly less feminine than Education, Humanities, Biological Sciences, and Other Professions and distinctly more feminine than Business, Law, Physical Sciences, Medicine and Engineering.

4) While Social Sciences, like all other fields, have a characteristic pattern of occupational values, the preferences fall across a wider range on the spectrum than other fields. It is "interest in people" which appears to be the item which produces the spread. Those students with a strong interest in working with people (an item we have found to be associated with interest in helping people) are often attracted to the Social Sciences because of the subject matter. At the opposite extreme, those who have purely intellectual interests and are not attracted to service professions may also be attracted to the Social Sciences because the intellectual and technical character of these fields means that many Social Science careers do not involve direct contacts with people. Perhaps

clinical studies would express this as "ambivalence" toward people, but in terms of our measures, it means that interest in Social Sciences can be found over one-half of the clock face, from the high noon of service values to the early evening of original only. It is only the money-oriented student who clearly avoids these fields, and among such students Social Sciences show no increase between freshman and senior year choices.

5) In terms of background characteristics, high SES and larger hometowns are associated with choice of Social Sciences, independent of values and API. The hometown effect may be due to stimulation of curiosity about people among those growing up in heterogeneous big cities, but as Humanities share the SES difference it is probably due to a class difference in interest in intellectual occupations rather than a peculiarly high status interest in people and society. Jews overchoose Social Sciences, but only within subgroups of students who have generally higher rates of interest in these fields, although because Jewish students tend to possess the other characteristics conducive to choice of Social Sciences they are heavily represented in these fields.

Humanities and Fine Arts

When we turn to a consideration of those fields commonly lumped under the title of "The Humanities," we make a rather surprising discovery: Although at graduation only 6.5 per cent of the students fell into the fields grouped together as Humanities, this is greater than the number in Physical Sciences, greater than the Social Sciences, and about the same as Law and Medicine combined.

Careers in the Humanities are not for everyone, however, as seven out of eleven of the items distinguish between seniors in Humanities and the rest of the graduating class; the single most powerful predictor being endorsement of the occupational value, "original and creative" [Table 4.4 a)]. In addition, these students tend to be high on API, low on the value "money," non-Negro, non-male, high on SES, and low on interest in working with people.

TABLE 4.4

CORRELATES OF CAREER CHOICE OF HUMANITIES AND FINE ARTS

a) "Q" Coefficients of Choice of Humanities and Fine Arts

Variable	Freshman	Retention	Recruitment	Senior
Values - Original . .	+.467	+.345	+.530	+.565
A.P.I. - High	+.234	+.170	+.378	+.349
Values - Money . . .	-.259	-.156	-.342	-.338
Race - Negro	-.263	-.570	*	-.291
Sex - Male	-.438	*	-.170	-.266
SES - High	+.192	*	+.256	+.235
Values - People . . .	*	-.237	*	-.149
Hometown - Larger . .	*	*	+.165	*
Religion - Protestant	*	*	*	*
Catholic .	*	*	*	*
Jewish . .	*	*	*	*

* = +.15 > Q > -.15

Table 4.4 b) shows how freshmen who reported career plans in the Humanities and Fine Arts are concentrated in the original only sector, 10.7 per cent of whom chose Humanities. At the opposite pole, for those endorsing money only or people and money, less than two per cent named a freshman choice in Humanities.

Because it was shown in Chapter III that endorsement of originality is associated with API and endorsement of making money with being a male, it is necessary to control for the humanistic values in considering the effects of sex and API on career choice in these fields [Table 4.4 c)].

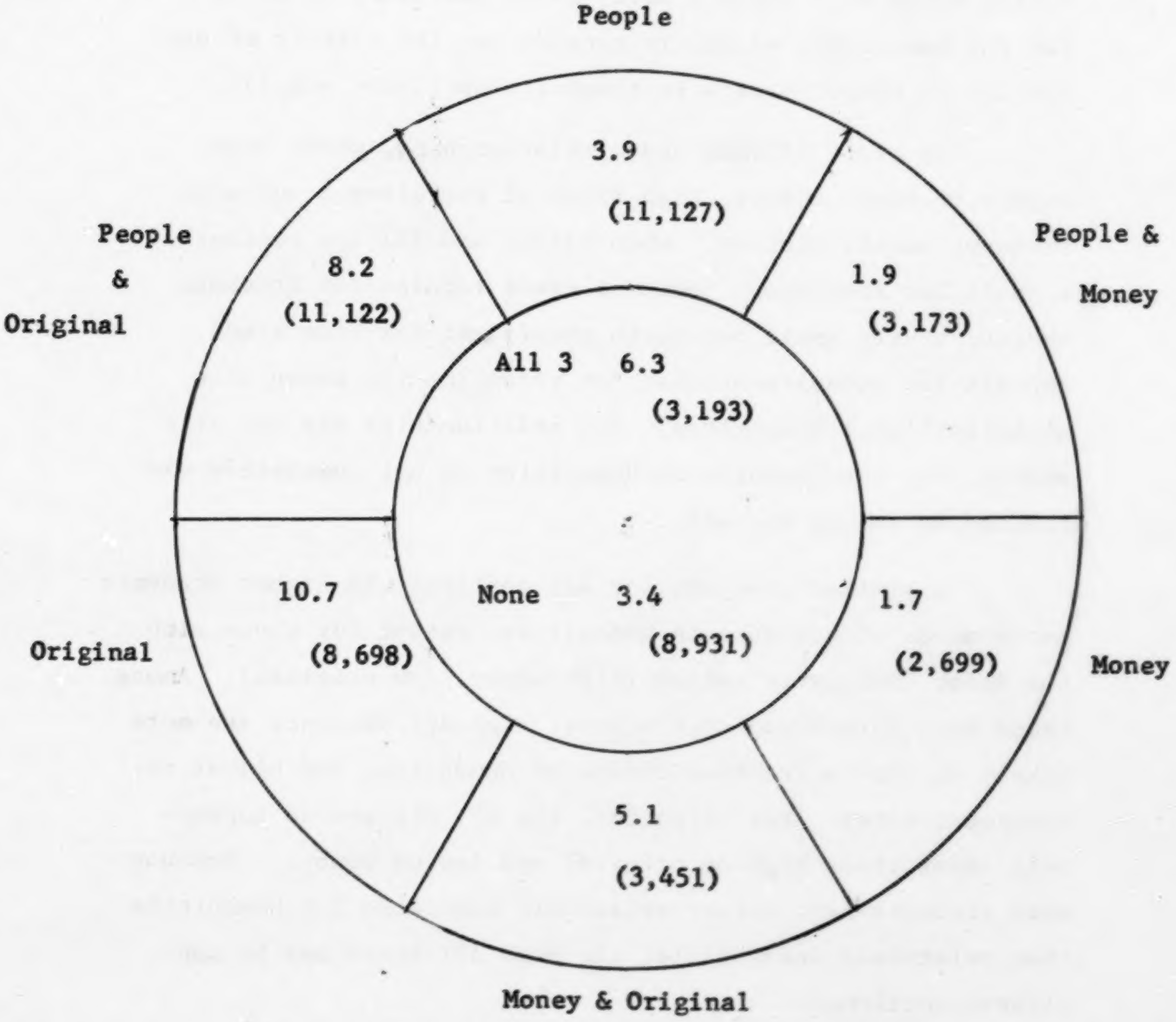
In terms of zero order relationships, women show higher freshman choice, high rates of recruitment and more frequent senior choices. When values and API are controlled, a small but consistent feminine trend remains for freshman choice, a very small but again consistent feminine trend appears for recruitment, but for retention the women show slightly higher loss rates. The relationships are not very strong, but the feminity of Humanities is not completely explained by values and API.

A similar analysis for API confirms the higher academic performance of students in Humanities, except for those with the least humanistic values (high money, low original). Among those with more humanistic values, high API students are more likely to have a freshman choice of Humanities and higher recruitment rates. For retention, the API difference appears only among those high on original and low on money. Because more students have values relatively favorable for Humanities than relatively unfavorable, the high API trend may be considered confirmed.

TABLE 4.4--Continued

b) Values and Freshman Choice of Humanities

(Per cent of Freshmen Choosing Humanities)


People
3.9
(11,127)
People
&
Original
8.2
(11,122)
People &
Money
1.9
(3,173)
All 3
6.3
(3,193)
10.7
(8,698)
Original
None
3.4
(8,931)
1.7
(2,699)
Money
5.1
(3,451)
Money & Original

N = ...	52,394
NA Field	3,147
NA Values	1,015
NA Both	108
Total Weighted N = ...	56,664

TABLE 4.4--Continued

c) Sex, A.P.I., Values, and Choice of Humanities

I. Per cent of Freshmen Choosing Humanities

Values		Sex							
		Male				Female			
		A.P.I.				A.P.I.			
Original	Money	Low		High		Low		High	
+	-	5.5	(3,731	7.2	(5,731)	11.8	(2,635)	14.6	(5,697)
±	±	2.7	(7,168)	3.5	(6,787)	5.0	(3,694)	7.5	(5,482)
-	+	1.2	(2,216)	0.9	(1,706)	4.9	(468)	4.9	(653)

N = ... 45,968

NA, Not Included 10,696

Total Weighted N = ... 56,664

II. Per cent Defecting Among Freshmen Choosing Humanities

Values		Sex							
		Male				Female			
		A.P.I.				A.P.I.			
Original	Money	Low		High		Low		High	
+	-	50.0	(206)	34.8	(410)	56.6	(311)	43.5	(829)
±	±	51.5	(194)	59.0	(239)	62.2	(185)	60.9	(412)
-	+	-	(27)	-	(16)	-	(23)	-	(32)

N = ... 2,884

III. Per cent of Freshmen in Other Fields Recruited to Humanities

Values		Sex							
		Male				Female			
		A.P.I.				A.P.I.			
Original	Money	Low		High		Low		High	
+	-	3.5	(3,525)	7.1	(5,321)	3.8	(2,324)	8.1	(4,868)
±	±	1.6	(6,974)	2.7	(6,548)	2.1	(3,509)	3.2	(5,070)
-	+	0.3	(2,189)	0.6	(1,690)	1.3	(445)	1.1	(621)

N = ... 43,084

Turning to the Index of Background Characteristics, it is seen in Table 4.4 a) that religion and city size are not importantly related to choice of Humanities, but the humanist is of higher SES in terms of freshman choice (Q = .192), recruitment (Q = .256) and senior choice (Q = .235). Similarly, Negro students are less likely to choose Humanities in terms of freshman choice (Q = -.263), retention (Q = -.570), and senior choice (Q = -.291). Table 4.4 d) reviews these relationships controlling for values, sex, and API.

Among whites the SES difference is considerably reduced but not eliminated by these controls. For freshman choice, there is no SES difference among males, but a high SES trend for women; for retention no consistent SES difference, and for recruitment a very slight but consistent difference in both sexes. SES is not a very strong predictor of choice of Humanities, but more often than not comparisons holding sex, API, and values constant show that the student from higher status family origins is more likely to decide on a career in Humanities and Fine Arts.

As is so often the case, the race difference is inconsistent when controls are applied. Whether this is because the case bases are reduced or because the race difference was spurious, is unknown. However, the fact that the sex, API, and value differences also tend to evaporate among Negroes suggests that unreliability of the data is again an explanation. Since the case bases for Negroes are generally 200 or less and since five per cent is a high figure for freshman choice and recruitment, it is clear that three or four cases can "throw" the figures for Negroes in such a way as to destroy a trend.

It is interesting to contrast the IBC results for Social Sciences and Humanities. Since higher SES seems a factor in both,

TABLE 4.4--Continued

d) Race, SES, and Choice of Humanities and Fine Arts

I. Per cent of Freshmen Choosing Humanities

Values*	A.P.I.	Sex					
		Male			Female		
		Race			Race		
		Negro	White		Negro	White	
			SES			SES	
			Low	High		Low	High
I	High	1.3 (77)	7.6 (2,180)	6.4 (2,778)	2.2 (89)	12.9 (1,663)	14.6 (3,323
	Low	1.0 (99)	4.7 (1,742)	6.0 (1,493)	1.9 (105)	7.8 (1,004)	15.2 (1,188)
II	High	4.2 (166)	3.3 (2,755)	3.8 (3,165)	1.6 (188)	5.2 (1,934)	8.7 (2,662)
	Low	6.1 (214)	2.7 (3,527)	2.5 (2,594)	7.9 (253)	2.8 (1,473)	6.2 (1,414)
III	High	- (17)	1.0 (605)	0.9 (912)	- (34)	1.7 (177)	7.1 (382)
	Low	0 (55)	0.9 (972)	0.9 (958)	- (24)	7.1 (198)	4.9 (185)

N = ... 40,605
NA, Not Included 16,059
Total Weighted N = ... 56,664

[*] Values: I = Original, not Money
II = Original & Money, not Original and not Money
III = Money, not Original.

TABLE 4.4 d)--Continued

II. Per cent Defecting Among Freshmen Choosing Humanities

Values*	A.P.I.	Sex					
		Male			Female		
		Race			Race		
		Negro	White		Negro	White	
			SES			SES	
			Low	High		Low	High
I	High	- (1)	41.8 (165)	25.1 (179)	- (2)	40.9 (215)	45.5 (486)
	Low	- (1)	53.6 (82)	56.7 (90)	- (2)	60.2 (78)	53.9 (180)
II	High	- (7)	64.8 (91)	47.9 (121)	- (3)	51.5 (101)	60.9 (230)
	Low	- (13)	45.7 (94)	53.1 (64)	- (20)	87.8 (41)	50.6 (87)
III	High	- (0)	- (6)	- (8)	- (0)	- (3)	- (27)
	Low	- (0)	- (9)	- (9)	- (0)	- (14)	- (9)

N = ... 2,438
Freshmen Not Choosing Humanities . 38,167
NA, Not Included 16,059
Total Weighted N = ... 56,664

---

*Defined as per Table 4.4 d) I.

TABLE 4.4 d)--Continued

III. Per cent of Freshmen in Other Fields Recruited to Humanities

Values*	A.P.I.	Sex					
		Male			Female		
		Race			Race		
		Negro	White		Negro	White	
			SES			SES	
			Low	High		Low	High
I	High	2.6 (76)	6.5 (2,015)	7.3 (2,599)	3.4 (87)	4.6 (1,448)	9.3 (2,837)
	Low	3.1 (98)	3.4 (1,660)	3.5 (1,403)	0.0 (103)	2.6 (926)	4.9 (1,008)
II	High	5.7 (159)	2.1 (2,664)	3.2 (3,044)	3.8 (185)	1.5 (1,833)	3.9 (2,432)
	Low	1.0 (201)	1.4 (3,433)	1.9 (2,530)	1.3 (233)	2.2 (1,432)	1.7 (1,327)
III	High	- (17)	0.5 (599)	0.8 (904)	- (34)	1.1 (174)	1.4 (355)
	Low	0 (55)	0.0 (963)	0.6 (949)	- (24)	0.0 (184)	0.0 (176)

N = ... 38,167

Freshmen Choosing Humanities. 2,438

NA, Not Included 16,059

Total Weighted N = ... 56,664

---

*Defined in Table 4.4 d) I.

the suggestion is that upper status students are attracted to the intellectual careers outside of Natural Science, i.e., that these fields still have a genteel aura. On the other hand, the fact that city size and being Jewish tend to be associated with Social Sciences but not Humanities suggests some affinity between these characteristics and the particular content of Social Sciences.

Table 4.4 e) puts all these factors--values, API, sex, race, and SES together in a joint prediction table for senior choice in Humanities and Fine Arts. Even in the most favorable category--high API women, high on original, low on money, and high SES, only 16 per cent choose Humanities and Fine Arts--but the progression is steady and constant for each factor, percentages increasing across the rows and up the columns of the table, except for the bottom row (low API, "wrong" values) where sex and SES make little difference, and among the Negroes whose small percentages fluctuate erratically.

The technique of weighted net percentage differences enables us to summarize the results, calculations being limited to white students because of the eccentric fluctuations in the Negro data.

Weighted Net Percentage Differences for Senior Choice of Humanities and Fine Arts

Item	Difference	Net
Values*	I- II	5.6
	II-III	2.8
API	High - Low	3.0
SES	High - Low	1.9
Sex	Female - Male	1.7

*Defined in Table 4.4 d)

The net differences are small, but they must be evaluated in the light of the fact that Humanities and Fine Arts are small fields in total. As is generally the case, values make for the

TABLE 4.4--Continued

e) Race, Sex, SES, Values, A.P.I., and Senior Career Choice of Humanities

(Per cent of Seniors Choosing Humanities)

Values*	A.P.I.	Race					
		White				Negro	
		Sex				Sex	
		Male		Female		Male	Female
		SES		SES			
		Low	High	Low	High		
I	High	10.4 (2,180)	11.7 (2,778)	11.7 (1,663)	15.9 (3,323)	2.6 (77)	5.6 (89)
	Low	5.4 (1,742)	5.9 (1,493)	5.5 (1,004)	11.1 (1,188)	3.0 (99)	1.0 (105)
II	High	3.2 (2,755)	5.1 (3,165)	4.0 (1,934)	7.0 (2,662)	5.4 (166)	4.8 (188)
	Low	2.8 (3,527)	3.0 (2,594)	2.4 (1,473)	4.6 (1,414)	0.9 (214)	3.6 (253)
III	High	1.2 (605)	1.0 (912)	1.7 (177)	3.1 (382)	- (17)	- (34)
	Low	0.2 (972)	1.0 (958)	2.0 (198)	0.0 (185)	0.0 (55)	- (24)

N = ... 40,605

NA, Not Included 16,059

Total Weighted N = ... 56,664 biggest differences. API is next in importance, and SES and sex contribute less than 2.0 independent of other factors.

---

*Defined in Table 4.4 d) I.

An odd reversal appears when the same data are viewed from the perspective of net increase and decrease [Table 4.4 f)]. The increase in Humanities and Fine Arts choices over the four years of college is far from general. Considering API and values, it appears that the increase is centered in the high API group with the most humanistic values (high original, low money) and except for the higher scholastic performers in this southwestern sector of the value wheel, Humanities shows small net losses in all other value and API groupings. Reading down the columns of the table, it is seen that there is a sex difference. Among men there is a net increase of 269 cases, while among women there is a net loss of 178 cases. Again, one of the ironies of turnover analysis is exposed. While we saw a feminine tendency in the correlations, the increase in Humanities and Fine Arts is a distinctly masculine effect when viewed in terms of net change. Why the discrepancy? We think it is because the sex differences in recruitment and retention were less than the original sex difference in freshman choice. There were so many freshman women in Humanities that even their moderate defections produced heavy losses, while there were so many freshman men not in Humanities that there were many male recruits. Although the reversal is not so sharp as in the case of Social Sciences, there is a suggestion here of another discontinuity. While the Humanities and Fine Arts students are relatively feminine at the beginning and end of college, the Q value decreases from -.438 for freshman choice to -.266 at graduation because the net trend during college is a masculine one.

Table 4.4 g) concludes the analysis by contrasting seniors in Humanities and Fine Arts with seniors in other particular fields. The most consistent difference is in that hallmark of humanists, interest in being original. Humanities stand out here against every other field. In terms of API, the Humanities surpass Education, Business, Biological Sciences, Other Professions, and Engineering;

TABLE 4.4--Continued

f) Absolute Turnover in Humanities and Fine Arts

(Recruits Minus Defectors)

A.P.I.	Values*	Sex				Total
		Male		Female		
		SES High	SES Low	SES High	SES Low	
High	I	+146	+62	+ 43	-21	+230
	II	+ 40	- 3	- 44	-24	- 31
	III	+ 1	+ 1	- 15	0	- 13
Low	I	- 2	+12	- 48	-23	- 61
	II	+ 14	+ 4	- 22	- 5	- 9
	III	+ 1	- 7	- 9	-10	- 25
Total . . .		+200	+69	- 95	-83	+ 91
		+269		-178		

*Defined in Table 4.4 d) I.

TABLE 4.4--Continued

g) Characteristics Showing a 10 Per cent or Greater Difference Between Humanities and Other Fields

Characteristic	Field								
	Educ.	Bus.	Soc. Sci.	Bio. Sci.	Other Profs.	Law.	Phy. Sci.	Med.	Engin.
Sex - Male	+	-	-			-	-	-	-
A.P.I. - High . .	+	+		+	+			-	+
Values - People .	-		-	+	-	-	+	-	+
Money . .		-				-	-		-
Original.	+	+	+	+	+	+	+	+	+
SES - High	+				+		+		+
Hometown - Larger.	+				+				
Religion - Protestant.						+		+	
Catholic.									
Jewish.								-	

+ = the per cent of seniors in Humanities possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

are within 10 per cent of Social Sciences, Law, and Physical Sciences, and are 10 per cent or more below Medicine. In terms of SES, Humanities are 10 per cent or more above Education, Other Professions, Physical Sciences, and Engineering, and are not below any particular field. Considering sex, the humanists are less feminine than the educationists, but 10 per cent or more above Business, Social Sciences, Law, Physical Sciences, Medicine, and Engineering in their per cent female.

To summarize:

1) The values of desiring originality and not desiring money are the outstanding characteristics of students choosing Humanities and Fine Arts. This is true for freshman choice, retention, recruitment; true in comparison with other specific fields; and it is net increase among those who hold these values which accounts for the net increase in this field over the four years.

2) High API levels are similarly characteristic of the humanists.

3) In terms of correlations, more often than not women are more likely to choose Humanities. However, the feminity of the field is mostly a carry-over from freshman choice, for when turnover is considered, women show a net loss and men a net gain during the four years of college.

4) Regardless of sex, API, and values, students choosing Humanities tend, although not strikingly so, to come from higher SES families.

5) Negroes appear to avoid Humanities, but the data are contradictory and no firm conclusion can be drawn.

Biological Sciences

Interest in recruitment to the Biological Sciences played a major role in the inception of this research because of the great concern about whether a sufficient number of able young people are being recruited to these fields which have such a strategic place in modern medical research. The ungrateful data, however, have tended to let us down by producing very few relationships discriminating Biological Sciences choices. Table 4.5 a) summarizes the Q coefficients, only 12 of which are greater than .15 in comparison

TABLE 4.5

CORRELATES OF CHOICE OF BIOLOGICAL SCIENCES

a) "Q" Coefficients for Career Choice of Biological Sciences

Variable	Freshman	Retention	Recruitment	Senior
Values - People . . .	-.433	-.691	-.622	-.673
Race - Negro	+.361	-.245	+.395	+.341
Values - Money . . .	-.174	*	*	-.154
Sex - Male	-.190	*	*	*
A.P.I. - High	*	+.206	*	*
Values - Original . .	*	*	*	*
SES - High	*	*	*	*
Religion - Protestant	*	*	*	*
Catholic .	*	*	*	*
Jewish . .	*	*	*	*

* + .15 > Q > -.15

with 30 for Social Sciences, 24 for Humanities, 24 for Business, and so on.

One reason for the low number of relationships may be that we asked the wrong questions, but since our questions do manage to provide frequent differences for other fields, the nature of Biological Sciences may play a part. To begin with, it is a very small field, with a weighted total of 1,081 seniors, in contrast to 1,744 in Social Sciences, 16,578 in Education, and 3,302 in Humanities. When "no answers" are subtracted and the 1,081 cases are arrayed into 20 or more cells the reliabilities of specific cells are considerably reduced, a problem we have seen with our sample of Negro students which is larger than the Biological Sciences sample. There may also be some substantive factors involved. It is possible that, like Social Sciences, the Biological Sciences are an interstitial group of fields lying between the Natural Sciences and other fields. Thus, we shall see that while biological scientists are no more or less feminine than students in general, they are a lot more feminine than physical scientists. If so, they will be less differentiated from students in general than other scientific fields. A final possibility is that internal differences are so great that they cancel each other out and produce bland results. Data bearing on this possibility will be considered in Chapter VII of this report.

All of which is to set the stage for the fact that the single and best predictor of choice of Biological Sciences is not endorsing the item "Opportunity to work with people rather than things," which has Q values of -.433, -.691, -.622 and -.673 for freshman choice, retention, recruitment, and senior choice respectively.

Examining sex and API differences with "people" held constant, we conclude [Table 4.5 b)] that: a) there is a slight sex difference in freshman choice, recruitment, retention, such that

TABLE 4.5--Continued

b) Sex, A.P.I., Values, and Choice of Biological Sciences

I. Per cent of Freshmen Choosing Biological Sciences

Values People	A.P.I.	Sex	
		Male	Female
-	High	2.1 (7,834)	4.1 (3,767)
	Low	1.7 (7,029)	4.8 (2,111)
+	High	1.0 (6,390)	1.2 (8,065)
	Low	0.8 (6,086)	1.1 (4,686)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N =. 56,664

II. Per cent Defecting Among Freshmen Choosing Biological Sciences

Values People	A.P.I.	Sex	
		Male	Female
-	High	44.2 (165)	41.9 (155)
	Low	52.0 (123)	47.5 (101)
+	High	73.8 (65)	75.5 (98)
	Low	98.1 (53)	90.0 (50)

N = ... 810

III. Per cent of Freshmen in Other Fields Recruited to Biological Sciences

Values People	A.P.I.	Sex	
		Male	Female
-	High	1.6 (7,669)	4.2 (3,612)
	Low	2.5 (6,906)	3.5 (2,010)
+	High	0.6 (6,325)	0.8 (7,967)
	Low	0.7 (6,033)	0.3 (4,636)

N = ... 45,158

women are more often attracted to Biological Sciences, but exceptions occur and the differences are two per cent or less; b) API has no consistent association with these choices except for retention. Among freshmen choosing Biological Sciences, those whose academic performance is lower have higher rates of defection.

When people, sex, and API are considered together as predictors of senior choice it appears that the API difference in retention has little net effect, for there is no API variation in the percentage of seniors choosing Biological Sciences [Table 4.5 c)]. The value difference is consistent and among those who are not people-oriented, women have slightly higher percentages choosing these fields. In summary: among people-oriented students less than one per cent of students of either sex choose Biological Sciences, among those who are not people-oriented, three per cent of the men and six per cent of the women aim for careers in Biological Sciences.

Consideration of net turnover [Table 4.5 d)] produces a similar conclusion. Among people-oriented students there is a net loss in Biological Sciences over the four years of college, while among non-people-oriented students there is a net gain sufficient to yield an over-all increase. Both men and women show net increases as do both API levels. The net increase is greater, though, for men and high API students than for women and low API students.

A somewhat richer yield comes from comparisons of biological scientists with those entering other fields. Table 4.5 e) shows quite a number of percentage differences larger than the arbitrary 10 per cent chosen to denote a contrast. The contrasts with other arts and science fields and Medicine are particularly noteworthy.

In contrast to Social Sciences and Humanities, the Biological Sciences are lower in API and interest in people.

TABLE 4.5--Continued

c) Sex, A.P.I., Values, and Senior Choice of Biological Sciences

I. Sex, Values, and Senior Choice of Biological Sciences, Controlling for A.P.I.

(Per cent of Seniors Choosing Biological Sciences)

Values	Sex			
	Male		Female	
People	A.P.I.		A.P.I.	
	High	Low	High	Low
-	2.8 (7,834)	3.3 (7,029)	6.4 (3,767)	5.9 (2,111)
+	0.8 (6,390)	0.7 (6,086)	1.1 (8,065)	0.4 (4,686)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

II. Sex, Values, and Senior Choice of Biological Sciences *Not* Controlling for A.P.I.

(Per cent of Seniors Choosing Biological Sciences

Values / People	Sex	
	Male	Female
-	3.0 (14,863)	6.2 (5,878)
+	0.8 (12,476)	0.8 (12,751)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

TABLE 4.5--Continued

d) Net Turnover in Biological Sciences

(Recruits Minus Defectors)

I. Values, A.P.I., and Sex

Values People	A.P.I.	Sex Male	 Female	Total
-	High	+199	+ 88	+287
	Low	+106	+ 23	+129
+	High	- 12	- 13	- 25
	Low	- 8	- 33	- 41
Total		+285	+ 65	+350

II. A.P.I. and Sex Only

A.P.I.	Sex Male	 Female	Total
High	+187	+ 75	+262
Low	+ 98	- 10	+ 88
Total	+285	+ 65	+350

TABLE 4.5--Continued

e) Characteristics Showing a 10 Per cent or Greater Difference Between Biological Sciences and Other Fields

Characteristic	Field								
	Phy. Sci.	Soc. Sci.	Hum.	Med.	Engin.	Educ.	Law.	Bus.	Other Profs.
Sex - Male	-	-		-	-	+	-	-	
A.P.I. - High		-	-	-				+	
Values - People		-	-	-		-	-	-	-
Money	-				-		-	-	
Original	-		-	+	-		+	+	+
SES - High	+			-	+	+	-		
Hometown - Larger		-		-			-		
Religion - Protestant				+			+		
Catholic							-		
Jewish				-			-		

+ = the per cent of seniors in Biological Sciences possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

In contrast to Medicine, Biological Sciences are: more often female, lower in API, less interested in people, more interested in originality, lower in SES, from smaller cities, more often Protestant, and less often Jewish.

The differences between biological scientists and physical scientists are of high interest, particularly since they turn out to be modified considerably by multi-variate analysis. Let us review the zero order percentage differences from tables in Chapter III.

Item	Per cent . . . Biological Sciences	 Physical Sciences
Male . . .	54	79
High API .	59	67
Original .	53	67
People . .	20	16
Money . .	19	30

In comparison with Biological Sciences, the Physical Sciences are considerably more masculine, considerably more interested in money, somewhat higher in API and original, but not much different in people.

Table 4.5 f) considers only students planning careers in science and gives the per cent in Biological Sciences, the remainder being in Physical Sciences. The top row tells us that the sex and API differences are additive, women scientists being more often in the biological fields regardless of API, and low API scientists being more often in biological fields regardless of sex. Among the scientists 17 per cent of high API men are in biological fields in contrast to 57 per cent of low API women.

When sex and API are controlled, the difference in originality, however, disappears. The lower originality interests of the biological scientists stem from their lower API's

TABLE 4.5--Continued

f) Values, Sex, A.P.I., and Choice of Natural Science as a Career

(Per cent Biological Scientists Among Seniors Choosing
Physical or Biological Science as a Career

Values	Sex							
	Male				Female			
	A.P.I.				A.P.I.			
	High		Low		High		Low	
Total	17	(1,623)	26	(1,037)	43	(770)	57	(246)
Original								
+	16	(1,239)	21	(614)	43	(395)	62	(103)
-	19	(384)	34	(423)	43	(375)	54	(143)
Money								
+	10	(400)	18	(312)	32	(194)	42	(69)
-	19	(1,223)	30	(725)	46	(576)	63	(177)
People								
+	21	(250)	32	(142)	46	(184)	-	(41)
-	16	(1,373)	26	(895)	42	(586)	60	(205)
Money People								
- +	23	(172)	27	(113)	51	(140)	-	(21)
$\left.\begin{matrix}+\\-\end{matrix}\right\}$ $\left.\begin{matrix}+\\-\end{matrix}\right\}$	18	(1,129)	32	(641)	43	(480)	62	(176)
+ -	9	(322)	14	(283)	33	(150)	45	(49)

N = ... 3,676
Seniors Not in Natural Science 42,292
NA, Not Included 10,696

Total Weighted N = ... 56,664

and from the fact that among scientists (although not in the total sample) women are strikingly lower on "original." The small difference in people and the considerable difference in money remain. Putting it another way, when sex and API are controlled, biological scientists are no less interested in originality, are more interested in people, and less interested in money. In short, among scientists, those with the service values of high people, low money are much more likely to choose biological fields than those with the achievement values of high money, low people, regardless of sex and API.

These differences being cumulative, the last part of Table 4.5 f) shows considerable difference in choice of Biological Sciences. Among high API men who are high on money and low on people, nine per cent choose biological fields, while among low API women with relatively more service values, 62 per cent choose biological fields.

It is often alleged that Biological Sciences and Medicine compete for the same students to the disadvantage of Biological Sciences. The lower API levels of the biological scientists when compared with aspirant physicians are in this direction, but the many other differences in values, sex, and social origins suggest that the two groups are quite different socially and personally. Except for interest in money and per cent Roman Catholics, physicians and biological scientists differ by 10 per cent on each item in the list, which is suggestive of different paths of recruitment rather than fierce competition.

In summary:

1) A lower interest in working with people is the only item which differentiates biological scientists from students in general.

2) When biological scientists are compared with physical scientists, instead of students in general, they are shown to be more often women, less often high on API, and more often to have service values rather than achievement values. They less often opt for originality, but this difference can be explained by their API and sex composition.

3) When biological scientists are compared with physicians they are found to differ by 10 per cent or more on all the items except interest in money and per cent Roman Catholic. This suggests that future physicians and biological scientists are more different than myth might suggest.

Law

Of all the fields considered, Law shows the greatest number of associations with the predictor items.[3] Along with Medicine it shows a high number of relationships for each aspect of choice [Table 4.6 a)], mostly because like Medicine it has a much higher number of associations with the social background variables.

Of all the predictor items, only people shows no relationship with choice of legal careers, a faintly surprising negative finding because offhand one would expect that wanting to work with people as clients or opponents would be one of the attractions of legal work. A case could be made that the lawyer, much more than the physician, is involved in interpersonal relations as part of his job, but among the students it is the doctor, not the lawyer, who wants to work with people.

None of this is to say that lawyers are not distinguished by a characteristic set of occupational values. Table 4.6 b) shows a clear-cut pattern for freshman choice. The freshmen choosing Law were considerably more likely to fall in the eastern territory of our value universe, being set off from students in general by a high interest in making money and a low interest in originality. This value pattern, we remember, is characteristic of businessmen, and it will be shown that to a considerable degree the future lawyer is a man with occupational values similar to the businessman but with distinct differences in API and social origins.

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[3] Seymour Warkov of NORC is conducting a separate analysis of recruitment to Law under the sponsorship of The Law School Admission Committee and The American Bar Foundation. His much more extensive materials on law students will be reported separately.

Table 4.6

CORRELATES OF CHOICE OF LAW

a) "Q" Coefficients for Choice of Law

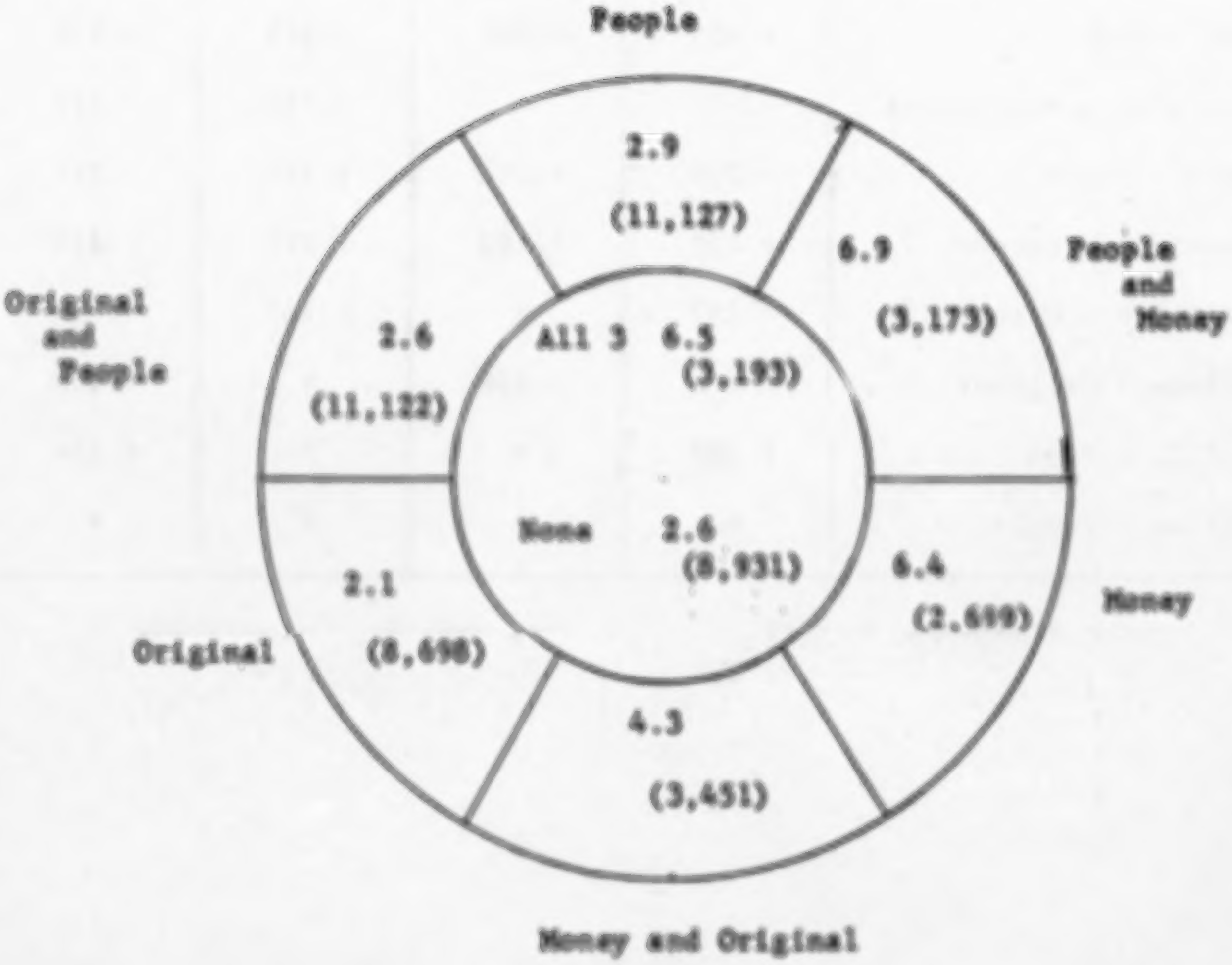
Variable	Freshman	Retention	Recruitment	Senior
Sex - Male	+.730	+.599	+.825	+.846
Values - Money	+.416	+.278	+.599	+.558
Religion - Jewish	+.331	+.358	+.401	+.431
SES - High	+.435	+.284	+.279	+.408
Religion - Protestant	-.401	*	-.326	-.377
Race - Negro	-.306	+.184	+.319	-.274
Hometown - Larger	+.258	+.183	+.189	+.262
Religion - Catholic	+.297	*	+.167	+.203
Values - Original	*	-.278	*	-.179
A.P.I. - High	+.180	*	*	+.154
Values - People	*	*	*	*

* = $+.15 \geq Q \geq -.15$.

TABLE 4.6--Continued

b) Values and Freshman Choice of Law

(Per cent of Freshmen Choosing Law)



N =	52,394
NA Field	3,147
NA Values	1,015
NA Both	108
Total Weighted N =	56,664

When sex and API are added to values, each has a part to play in the choice of Law [Table 4.6 c)]. The bar is a strongly masculine field, and regardless of values and API, men are attracted to legal work and women avoid it. This is true for freshman choice, recruitment and for retention. Although women with the appropriate values are more often attracted to Law than women with "wrong" values, a greater proportion of low API men with "wrong" values shift into Law than high API women with the "right" values.

Academic performance is a third independent contributor Regardless of sex and values, high API students tend toward the law and low API students shun it, for freshman choice, retention, and recruitment.

Putting this all together, it is seen that for high API men with the right values (high money, low originality), 10 per cent of freshmen starting with other preferences shifted into Law at graduation, while among low API women who are low on money and high on originality the recruitment rate is zero. Because these are sample data one cannot conclude that the true rate is zero.

Having established the importance of values, sex, and API, we can now turn to the social characteristics whose Q values blackened the columns of Table 4.6 a). Quite consistently, for each aspect of choice, preference for the Law is associated with being Jewish, coming from a high SES family, not being Protestant, coming from a larger city, and being a Roman Catholic, a set of characteristics shown in Chapter II to be strongly associated with each other. In order to simplify the analysis, the IBC (Index of Background Characteristics) items will be first considered together and then in tabulations controlling for sex, API and values.

Table 4.6 d) shows the associations of religion, SES, size of hometown and race with freshman choice, defection, and recruitment to Law: a) the socio-economic status differentials in freshman choice, retention, and recruitment hold independent of hometown size and religion, high status students showing a consistent

TABLE 4.6--Continued

c) Sex, A.P.I., Values, and Choice of Law

I. Per cent of Freshmen Choosing Law

Values*	Sex							
	Male				Female			
	A.P.I.				A.P.I.			
	High		Low		High		Low	
I . .	11.3	(2,812)	6.9	(3,016)	2.8	(1,218)	0.8	(778)
II . .	6.5	(7,979)	3.7	(8,022)	1.0	(8,980)	0.6	(5,359)
III . .	3.6	(3,433)	2.2	(2,077)	0.6	(1,634)	0.3	(660)

N = ... 45,968
NA, Not Included. 10,696
Total Weighted N= 56,664

*I = People, Original and Money: People and Money: Money only
II = All other
III = Original only.

TABLE 4.6 c)--Continued

II. Per cent Defecting Among Freshmen Choosing Law

Values*	Sex			
	Male		Female	
	A.P.I.		A.P.I.	
	High	Low	High	Low
I..	22.6 (319)	40.1 (207)	- (34)	- (6)
II..	42.9 (522)	47.3 (296)	72.1 (86)	- (32)
III..	54.0 (124)	- (45)	- 9)	- (2)

N = ... 1,682

III. Per cent of Freshmen Choosing Other Fields Recruited to Law

Values*	Sex			
	Male		Female	
	A.P.I.		A.P.I.	
	High	Low	High	Low
I..	9.8 (2,493)	5.8 (2,809)	0.7 (1,184)	0.8 (772)
II..	3.0 (7,457)	2.1 (7,726)	0.2 (8,894)	0.3 (5,327)
III..	1.4 (3,309)	1.1 (2,032)	0.6 (1,625)	0.0 (658)

N = ... 44,286

*Defined in 4.6 c) I.

TABLE 4.6--Continued

d) Index of Background Characteristics and Choice of Law

I. Per cent of Freshmen Choosing Law

SES	Hometown	Race							
		Negro		White					
				Religion					
				Protestant		Catholic		Jewish	
High	Larger			3.7	(6,102)	9.4	(3,197)	8.4	(2,108)
	Smaller			3.2	(7,311)	7.4	(1,989)	8.4	(347)
Low	Larger			1.7	(3,060)	3.2	(2,989)	3.1	(1,019)
	Smaller	2.1	(1,321)	1.6	(8,554)	1.8	(2,513)	5.2	(95)

N = ... 40,605
NA, Not Included 16,059
Total Weighted N = ... 56,664

II. Per cent Defecting Among Freshmen Choosing Law

SES	Hometown	Race							
		Negro		White					
				Religion					
				Protestant		Catholic		Jewish	
High	Larger			38.9	(224)	43.0	(302)	23.2	(177)
	Smaller			48.1	(233)	49.0	(147)	-	(29)
Low	Larger			64.2	(53)	49.0	(104)	-	(32)
	Smaller	-	(28)	51.1	(141)	-	(46)	-	(5)

N = ... 1,521

TABLE 4.6 d)--Continued

III. Per cent of Freshmen in Other Fields Recruited to Law

SES	Hometown	Race			
		Negro	White		
			Religion		
			Protestant	Catholic	Jewish
High	Larger		2.1 (5,878)	3.9 (2,895)	5.0 (1,931)
	Smaller		1.9 (7,078)	2.6 (1,842)	6.9 (318)
Low	Larger		1.1 (3,007)	2.0 (2,885)	3.0 (987)
	Smaller	1.2 (1,293)	1.2 (8,413)	2.1 (2,467)	0.0 (90)

N = ... 39,084

)

propensity for legal careers; b) the order--Protestant, Catholic, and Jewish-tends to hold up for consideration of freshman choice and recruitment, but there is no Protestant-Catholic difference in defections from the freshman choice of Law; c) although when zero order coefficients are considered there are positive associations between size of hometown and choice of Law, when religion and SES are controlled, the city size differences are not consistent, the greater tendency for big city students to choose Law stemming mostly from their higher SES origins and greater proportions of Catholics and Jews. In sum, high status students, Jews and Catholics show a pull toward Law, but city size has no independent effect.

Considering simultaneously values, SES, API and religion among men and values, SES and API among women (there were too few feminine lawyers to justify cross-tabulations by religion, and too few Negro students choosing Law to treat in this analysis), it is seen that each of these factors contributes to freshman choice and recruitment [Table 4.6 e)]. A few qualifications emerge: The difference between Catholics and Jews disappears, but the lesser interest in Law for Protestants remains, SES makes little difference in recruitment among women, but generally each factor contributes to choice of Law. At the extremes, among high SES, high API, high money, low originality, Jewish men, 19 per cent chose Law as freshmen and 17 per cent of the freshmen in other fields shifted into Law by graduation. At the opposite pole among low status, low SES, high original, low money women, zero per cent chose Law as freshmen and zero per cent shifted in from another freshman choice.

Because these factors are independent in their effects and generally consistent across the three components of choice, among the seniors they yield a cumulative prediction table for Law [Table 4.6 f)]. Each factor produces a difference. For example, among high API, high SES men with favorable values 31 per cent of the Jews choose Law in comparison with 17 per cent of the

TABLE 4.6--Continued

e) Sex, A.P.I., Values, SES, Religion, and Choice of Law

I. Per cent of Freshmen Choosing Law

Values*	SES	A.P.I.	Sex			
			Male			Female
			Religion			
			Jewish	Catholic	Protestant	
I.	High	High	19.1 (329)	20.2 (382)	10.1 (853)	2.9 (702)
		Low	15.2 (224)	15.5 (440)	6.5 (688)	1.2 (326)
	Low	High	7.6 (92)	6.5 (355)	4.9 (510)	2.8 (354)
		Low	7.1 (99)	3.9 (456)	2.7 (709)	0.3 (324)
II.	High	High	13.1 (475)	12.7 (852)	7.7 (2,295)	1.2 (4,723)
		Low	5.5 (199)	11.1 (870)	2.5 (1,817)	1.2 (2,163)
	Low	High	4.7 (254)	5.0 (954)	2.8 (2,109)	0.5 (2,935)
		Low	2.9 (170)	2.8 (1,236)	2.2 (2,598)	0.3 (2,135)
III.	High	High	7.1 (239)	12.4 (340)	2.9 (1,090)	0.5 (942)
		Low	- (49)	6.6 (257)	2.4 (501)	0.3 (298)
	Low	High	2.3 (88)	2.0 (406)	1.6 (772)	0.4 (485)
		Low	- (39)	1.6 (313)	1.0 (621)	0.0 (216)

N =	39,284
Negro	1,321
NA, Not Included	16,059
Total Weighted N =	56,664

---

*Cf. Table 4.6 c) I. for definition.

TABLE 4.6 e)--Continued

II. Per cent of Freshmen in Other Fields Recruited to Law

Values*	SES	A.P.I.	Sex			
			Male			Female
			Religion			
			Jewish	Catholic	Protestant	
I.	High	High	16.9 (266)	11.5 (305)	11.1 (767)	1.5 (681)
		Low	8.9 (190)	10.5 (372)	4.7 (643)	1.9 (322)
	Low	High	16.5 (85)	8.7 (332)	4.5 (485)	2.0 (344)
		Low	3.3 (92)	5.9 (438)	3.8 (690)	0.0 (323)
II.	High	High	7.0 (413)	5.9 (744)	3.3 (2,118)	1.1 (4,664)
		Low	6.4 (188)	4.0 (773)	2.0 (1,771)	1.4 (2,138)
	Low	High	3.3 (242)	1.8 (906)	1.7 (2,049)	2.7 (2,921)
		Low	1.8 (165)	2.1 (1,201)	1.5 (2,542)	0.3 (2,129)
III.	High	High	4.5 (222)	2.0 (298)	1.4 (1,058)	0.4 (937)
		Low	- (46)	1.2 (240)	2.9 (489)	0.0 (297)
	Low	High	1.2 (86)	0.3 (398)	0.5 (760)	0.0 (483)
		Low	- (39)	0.6 (308)	0.3 (615)	0.0 (216)

N = ...	37,791
Freshmen Choosing Law	1,493
Negro	1,321
NA, Not Included	16,059
Total Weighted N = ...	56,664

TABLE 4.6--Continued

f) Per cent of Seniors Choosing Law

Values	SES	A.P.I.	Sex				
			Male				Female
			Race				
			White			Negro	
			Jewish	Religion Catholic	Protestant		
I.	High	High	31.0 (329)	24.8 (382)	17.4 (853)		1.3 (702)
		Low	20.1 (224)	16.1 (440)	7.6 (688)		1.8 (326)
	Low	High	22.8 (92)	10.1 (353)	8.0 (510)	- (32)	3.3 (395)
		Low	6.1 (99)	8.3 (456)	5.2 (709)	14.9 (67)	0.0 (361)
II.	High	High	15.4 (475)	13.3 (852)	8.1 (2,295)		0.3 (4,723)
		Low	9.5 (199)	9.1 (870)	3.0 (1,817)		0.3 (2,163)
	Low	High	6.3 (254)	3.7 (954)	2.4 (2,109)	4.3 (184)	0.4 (3,180)
		Low	1.8 (170)	3.6 (1,236)	2.7 (2,598)	3.6 (251)	0.3 (2,445)
III.	High	High	7.9 (239)	7.6 (340)	3.1 (1,090)		0.5 (942)
		Low	- (49)	5.1 (257)	4.0 (501)		0.0 (297)
	Low	High	1.1 (88)	0.7 (406)	0.9 (772)	- (44)	0.0 (510)
		Low	- (39)	1.9 (313)	0.5 (621)	0.0 (50)	0.0 (251)

N = ... 40,604
Missing, unaccounted for 1
NA, Not Included 16,059
Total Weighted N = : : . . . . : 56,664

Protestants and 23 per cent of the Catholics. Among Jewish men with favorable values 31 per cent of the high API, high SES students choose Law, in comparison with six per cent of the low status, low SES students. Similarly for Catholic men high on API and SES, 23 per cent of those checking money and not original choose Law, eight per cent of those checking original but not money, and 13 per cent of those checking both or neither.

Summarizing the results in terms of weighted net percentage differences in Table 4.6 f), considering men only, we find:

Weighted Net Percentage Differences
for Senior Choice of Law

Item	Difference	Net Difference
Values .	I minus II	4.5
Religion	Catholic minus Protestant	3.4
SES . .	High minus Low	3.1
API . .	High minus Low	1.9
Religion	Jewish minus Catholic	1.9
Values .	II minus III	1.6

The differences are small, as they almost always are for smaller fields, the largest differences being for high versus middle values, for Catholics versus Protestants, and for SES.

As usual it is difficult to draw firm conclusions about the choices of Negro students. Considering the Q coefficients, there are negative relationships with freshman and senior choice, but positive relationships with retention and recruitment. Looking at the percentages in Table 4.6 f) there is some suggestion that when compared with low status Protestants, Negroes are more likely to choose Law as seniors, but the trend is not entirely consistent and too many cells have insufficient cases to justify firm conclusions.

Remembering from Chapter III that Law shows a net increase from freshman to senior year, we are led to ask whether this increase is uniform across the tabulated characteristics as in the analysis of Education and Business or limited to particular subgroups. The latter is shown to be the case in Table 4.6 g). While both high and low SES and high and low API groups show net increases, the turnover is quite different by sex and values. The summary table for Table 4.6 g) tells us that the increase in Law comes almost totally from men with the legal values of high money and low originality. Among women, regardless of values, and men with the "non-legal" values of originality and low money, there are net losses over the four years, while among men with intermediate values there is a very slight net increase. As only nine per cent of the sample are men with the value combination of high money, low original, it can be concluded that it is the sharp pull of the Law for these students which explains its increase, rather than a general tendency for this career to gain in attractiveness for American undergraduates.

Table 4.6 h) concludes the data on Law by summarizing its contrasts with other particular fields. Just as lawyers are differentiated from students in general, they show a large number of differences when compared with seniors aiming for other fields. Rather than discussing all of the differences, it may be more useful to look at two particular fields, Medicine and Business. It is interesting to note the similarity between lawyers and physicians. While lawyers differ from engineers on eight of the items and from biological scientists on nine items, only two of the characteristics differentiate lawyers and physicians, API and money. In terms of their family characteristics these two occupations show quite similar patterns of recruitment, the two differences being that M.D.'s have higher academic performance records and lawyers are more interested in making money. Somewhat the reverse is true when lawyers

TABLE 4.6--Continued

g) Net Turnover in Law (Recruits Minus Defectors)

I. Law Turnover by Values, SES, A.P.I., Sex, Religion

Values	SES	A.P.I.	Sex				
			Male			Female	Total Male and Female
			Religion				
			Protestant	Catholic	Jewish		
I.	High	High	+62	+18	+39	-12	+107
		Low	+ 7	+ 3	+11	+ 2	+ 23
	Low	High	+16	+13	+14	+ 3	+ 46
		Low	+18	+20	- 1	- 1	+ 36
II.	High	High	+ 8	+ 5	+11	-40	- 16
		Low	+ 9	-18	+ 8	-19	- 20
	Low	High	-10	-13	+ 4	- 3	- 22
		Low	+14	+ 9	- 2	+ 1	+ 22
III.	High	High	+ 2	-16	+ 2	0	- 12
		Low	+ 8	- 4	0	- 1	+ 3
	Low	High	- 5	- 5	- 1	- 2	- 13
		Low	- 3	+ 1	0	0	- 2
Total			+126	+13	+85	-72	+152
				+224			

TABLE 4.6 g)--Continued

II. Low Turnover - Individual Variables

Values

I.	+212
II.	- 36
III.	- 24
Total	+152

SES

High	+ 85
Low	+ 67
Total	+152

A.P.I.

High	+ 90
Low	+ 62
Total	+152

Sex

Male	+224
Female	- 72
Total	+152

III. Low Turnover by Values and Sex

Values	Sex		Total Male & Female
	Male	Female	
I.	+220	- 8	+212
II.	+ 25	- 61	- 36
III.	- 21	- 3	- 24
Total .	+224	- 72	+152

TABLE 4.6--Continued

h) Characteristics Showing a 10 Per cent or Greater Difference Between Law and Other Fields

Characteristic	Field								
	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Phy. Sci.	Med.	Engin.
Sex - Male	+		+	+	+	+	+		
A.P.I. - High . .		+				+		-	+
Values - People .	-			+	+		+		+
Money . .	+		+	+	+	+	+	+	+
Original.			-	-	-		-		-
SES - High	+	+	+		+	+	+		+
Hometown - Larger.	+				+	+			+
Religion - Protestant .	-	-	-	-	-	-	-		-
Catholic	+		+		+	+			
Jewish .	+	+			+	+			+

+ = the per cent of seniors in Law possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

are compared with future businessmen. There are no value differences, both fields being characterized by the high money, low originality pattern, but lawyers are higher on API, and differentiated on SES and religion. Compared with businessmen, lawyers appear to be men with similar values, but better grades and origins in high status but minority religion families.

To summarize the major correlates of choice of law:

1) Sex is the strongest predictor of choice of Law, women seldom choosing the field even among those with appropriate API, SES, and value configurations.

2) Lawyers are characterized by the acquisitive values of high money, low originality, but being neither higher nor lower in their interest in working with people.

3) It is the net increase among men with commercial values which accounts for the net increase in Law, the field showing losses for women and no sharp gain for men with other value patterns.

4) Lawyers tend to be high academic performers. Since, however, high academic performance tends to be associated with endorsement of originality, this tendency results in a narrowing of the eligibles. Generally, the items predictive of a field are correlated with each other (women and people-oriented students gravitate to Education and women tend to be people-oriented, men and money-oriented students shift toward Business and men tend to be money-oriented) but here the relationship is negative. Twelve per cent of the high API men have the high money, low originality pattern, in comparison with 17 per cent of the low API men, while 40 per cent of the high API men have the non-legal values of high original, low money, compared with 28 per cent of the low API men. To some extent, recruitment to Law appears restricted by the fact that the field appears to attract high academic performers with a value pattern atypical of their API category.

5) Jews and Catholics overchoose Law when compared with Protestants, and independent of this, high SES students have a consistent pull toward the bar. Students from larger cities more often choose Law, but this tendency can be explained by the religious and SES composition of those from larger hometowns.

Physical Sciences

In proceeding down the list from the biggest gainer, Education, to the field with the greatest loss of students during college, Engineering, we have now arrived at the first field which shows a decline over the four years, Physical Sciences (Chemistry, Physics, Mathematics, Geology, etc.). Because of the intense interest in this loss and the importance of scientific personnel in 1962 America, it is important to analyze carefully the characteristics associated with retention and defection rates in the Physical Sciences.

As usual, the Q coefficients provide the simplest beginning point. Table 4.7 a) shows that sex and two value items have an across-the-board association. People-oriented students, women, and those not endorsing originality are less oriented to Physical Sciences in terms of freshman choice, retention, recruitment and senior choice. Three other items show less consistent effects. High API is associated with freshman and senior choice, but not choices during college; wanting to make money is associated with recruitment and senior choice, but not freshman choice or retention, and lower rather than higher SES is associated with retention and recruitment but not freshman or senior choice.

In proceeding to untangle these interrelated factors, values provide a good take-off point. Table 4.7 b) shows the per cent of freshmen choosing Physical Sciences in the various sectors of the value wheel. It would appear that not having a people orientation and having a money orientation make the big difference, choice of Physical Sciences being greatest in the high money, low people wedges of the pie. When, however, sex and API are taken into consideration [Table 4.7 c)], matters begin to get complicated. For the first time, we see different relationships among the four sex and API groups. That is, for different types of freshmen, different value configurations are associated with initial choice of Physical Sciences.

TABLE 4.7

CORRELATES OF CHOICE OF PHYSICAL SCIENCES

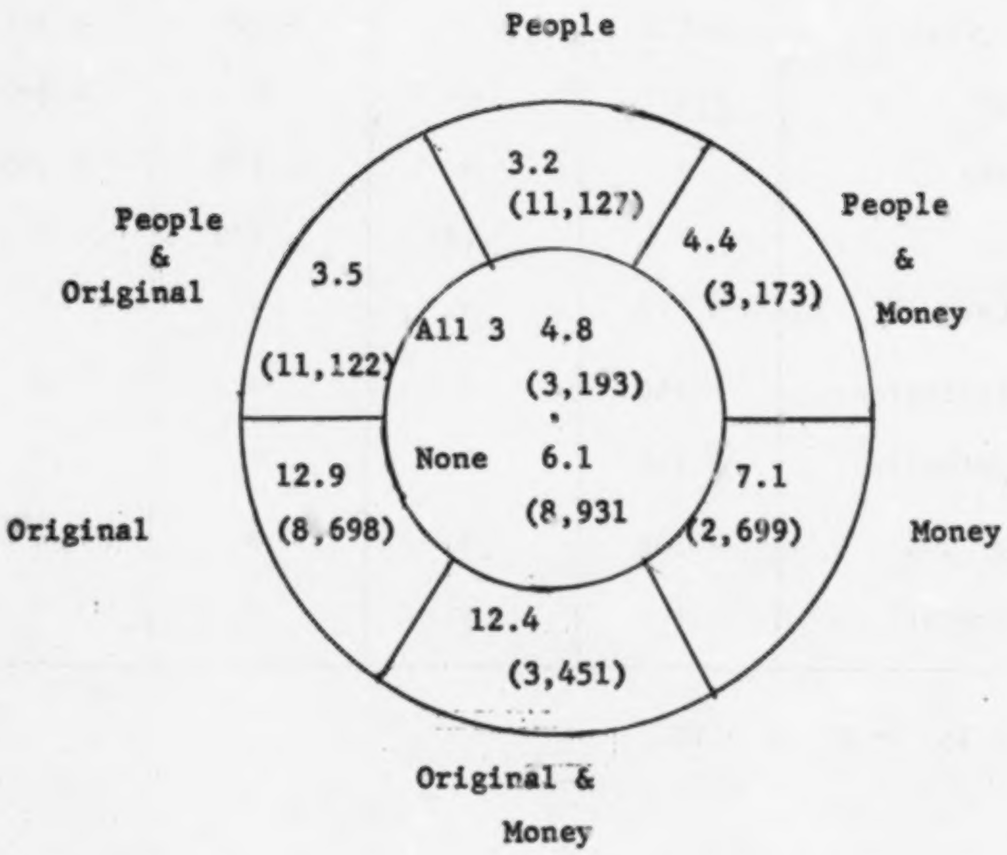
a) "Q" Coefficients for Choice of Physical Sciences

Variable	Freshman	Retention	Recruitment	Senior
Values - People	-.491	-.699	-.720	-.757
Sex - Male	+.301	+.265	+.537	+.470
Values - Original . . .	+.255	+.341	+.223	+.341
A.P.I. - High	+.257	*	*	+.237
Values - Money	*	*	+.220	+.163
SES - High	*	-.181	-.173	*
Hometown - Larger . . .	+.177	*	*	*
Religion - Protestant .	-.166	*	*	*
Catholic . .	+.156	*	*	*
Race - Negro	-.330	*	*	*
Religion - Jewish . . .	*	*	*	*

* +.15 > Q > -.15.

TABLE 4.7--Continued

b) Values and Freshman Choice of Physical Science



N = ...	52,394
NA, Freshman Field	3,147
NA Values	1,015
NA Both	108
Total Weighted N = . . .	56,664

TABLE 4.7--Continued

c) Values, Sex, A.P.I., and Freshman Choice of Physical Sciences

I. Per cent of Freshmen Choosing Physical Sciences - Chart

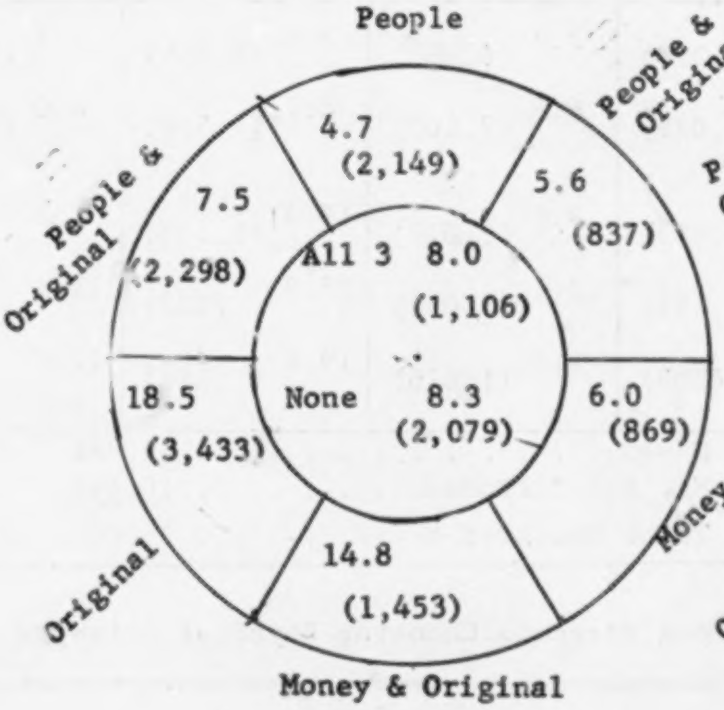
A.P.I.

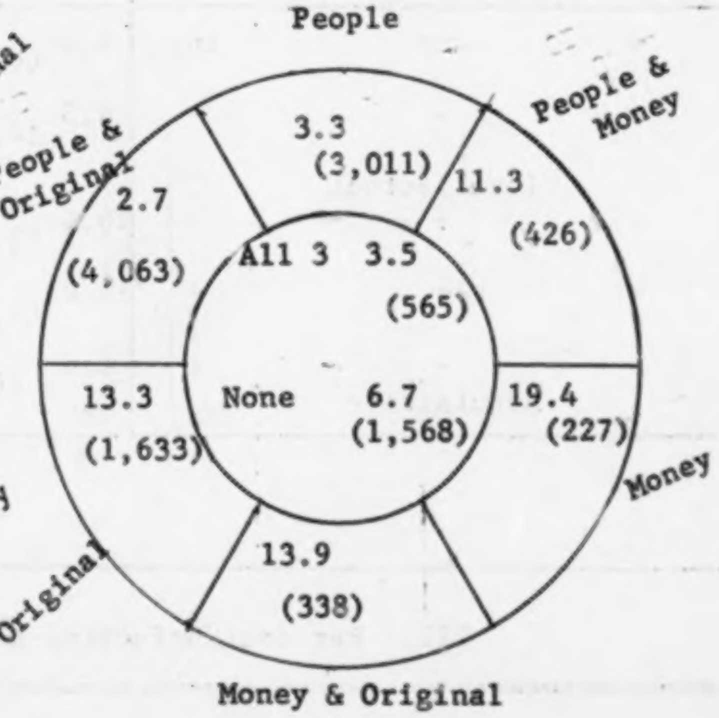
Sex

Male

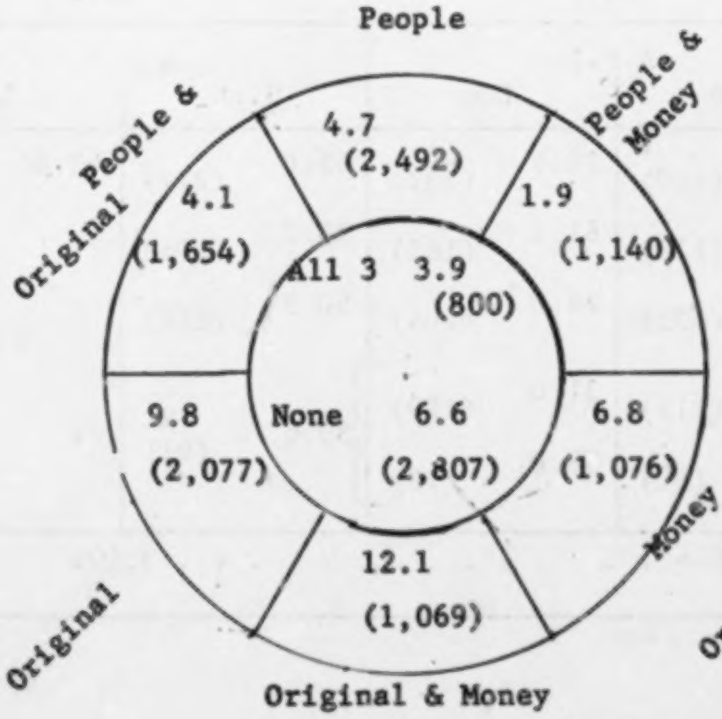
Female

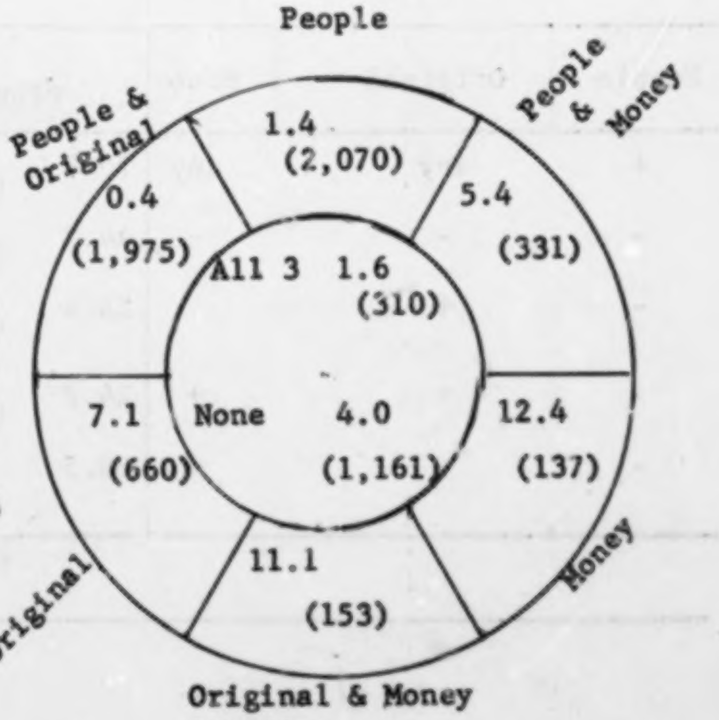
High





Low





N = ... 45,968
NA, Not Included . 10,696
Total Weighted N = 56,664

TABLE 4.7 c)--Continued

II. Per cent of Freshmen Choosing Physical Sciences

Values			Sex							
			Male				Female			
			A.P.I.				A.P.I.			
People	Original	Money	High		Low		High		Low	
+	any	any	6.4	(6,390)	3.9	(6,086)	3.4	(8,066)	1.3	(4,686)
-	-	-	8.3	(2,079)	6.6	(2,807)	6.7	(1,568)	4.0	(1,161)
-	Intellectual +	-	18.5	(3,433)	9.8	(2,077)	13.3	(1,633)	7.1	(660)
-	+	+	14.8	(1,453)	12.1	(1,069)	13.9	(338)	11.1	(153)
-	- Acquisitive	+	6.0	(869)	6.8	(1,076)	19.4	(227)	12.4	(137)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

III. Per cent Defecting Among Freshmen Choosing Physical Sciences

Values			Sex							
			Male				Female			
			A.P.I.				A.P.I.			
People	Original	Money	High		Low		High		Low	
+	any	any	73.9	(410)	78.5	(237)	83.0	(277)	65.6	(61)
-	-	-	44.2	(172)	61.1	(185)	35.2	(105)	-	(47)
-	+	-	25.4	(635)	26.0	(204)	50.5	(218)	-	(47)
-	+	+	24.2	(215)	31.0	(129)	39.6	(91)	-	(34)
-	-	+	63.5	(52)	58.9	(73)				

N = ... 3,192

TABLE 4.7 c)--Continued

IV. Per cent of Freshmen in Other Fields Recruited to Physical Sciences

Values			Sex			
			Male		Female	
			A.P.I.		A.P.I.	
People	Original	Money	High	Low	High	Low
+	any	any	1.5 (5,980)	0.8 (5,849)	0.6 (7,789)	0.1 (4,625)
-	-	-	3.7 (1,907)	3.2 (2,622)	1.5 (1,463)	1.3 (1,114)
-	+	-	7.9 (2,798)	6.1 (1,873)	3.1 (1,415)	0.8 (613)
-	+	+	6.7 (1,238)	8.8 (940)	8.2 (291)	0.0 (136)
-	-	+	3.5 (817)	4.3 (1,003)	12.0 (183)	1.7 (120)

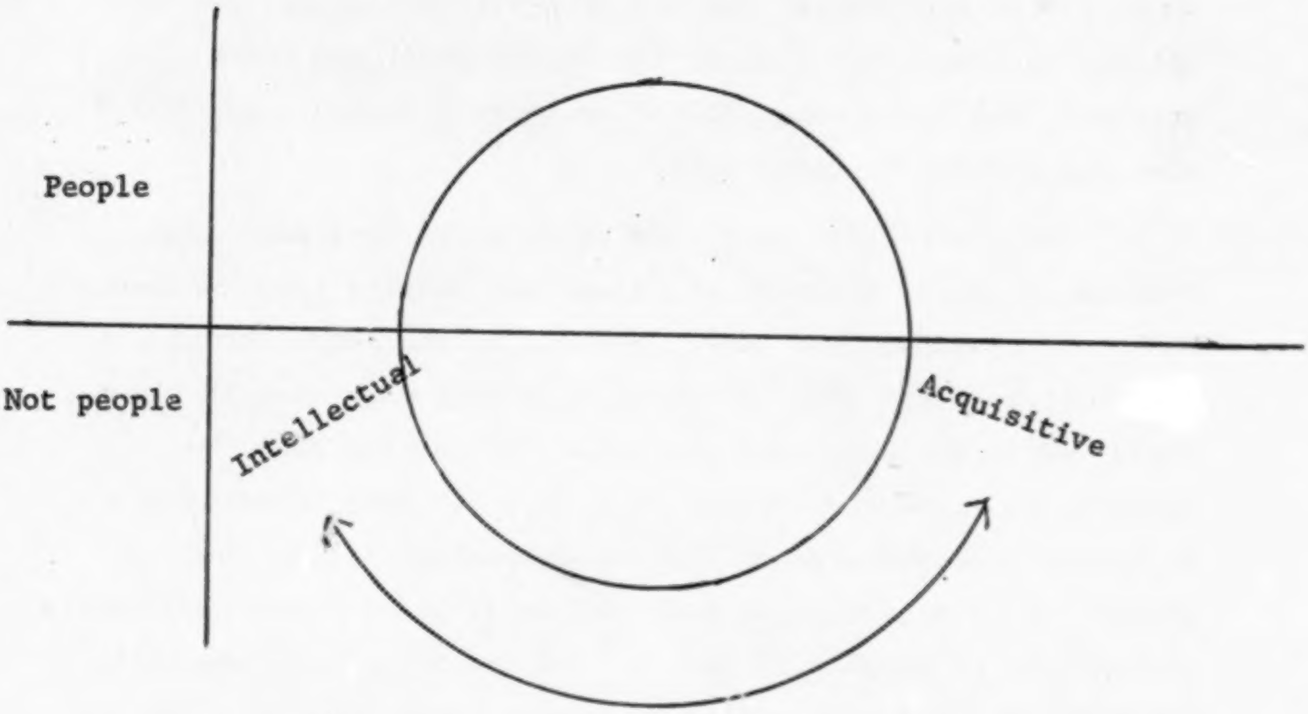
N = ... 42,776

High API Males: Among men who were destined to be high academic performers, choice of Physical Sciences is greatest, not for money and low people, but for high original, low people, low money, the intellectual syndrome characteristic of Humanities choosers. In the "original only" group 18 per cent choose Physical Sciences, in contrast to six per cent in the "money only" group.

Low API Males: Among men destined to lesser academic glory, the clock moves backward a little, and freshman choice of Physical Sciences is greatest among those with a touch of acquisitiveness as well as a disinterest in people. The most frequent choices for this group are not in the original only pattern, but in the original and money pattern.

Females: Among both high and low API women, it is the money-oriented who stand out as relatively frequent choosers of Physical Sciences. In both groups of women, the money only group have the highest rates of choice as freshmen. Surprisingly, the effect is so strong that within the money only group, women are more likely to choose Physical Sciences than are men!

We can make some more systematic sense out of these findings by looking at the value wheel in a slightly different fashion. To begin with, it is hardly surprising that regardless of sex and API, the people-oriented students are not drawn to Physical Sciences. Therefore, we will treat all people-oriented students as a single group, ignoring differences in money and originality. Among the non-people-oriented, however, we can think of a variation from acquisitiveness to intellectual interests, defined by responses to the items on originality and money. In diagram form:



What seems to be going on is that depending on sex and API, freshman interest in Physical Sciences, among non-people-oriented students varies with originality or acquisitiveness or both. The continuation of Table 4.7 c) lays out the data to make clear these new distinctions. In each comparison, for each sex and API, the people-oriented have the lowest rates of freshman choice. Within the non-people-oriented students, however, we find among the high API men a greater scientific choice among the intellectually-oriented, and a lesser choice for the acquisitive; for low API men increased interest with both intellectual and acquisitive values, and for women the highest rates among the acquisitive.

In short, it appears that for the "brightest" freshman men who are not interested in people, intellectual values are associated with choice of Physical Sciences but for lower API men and for women interest in making money adds to interest in Physical Sciences.

A similar pattern is present for recruitment [Table 4.7 c)]. Among high API men, entrance rates for freshmen originally choosing other fields are highest for the original only group; for low API men the rates are highest for the original and money-oriented; and among women it is the money-oriented girls who show the highest entrance rates.

When attention is turned to rates of defection from freshman choices, however, still another complication emerges. Table 4.7 c) shows that, among men, it is the intellectual item "originality" which is associated with remaining in the field, while the pecuniary prone (as well as the people-oriented who have tremendous rates of defection) desert science in both API groups. Among the men endorsing original and not people, about a quarter of each API level leave Physical Sciences, in contrast to roughly 60 per cent of the money only and three-quarters of the people-oriented. Among women, however, the reverse seems to hold. Although the case bases are very small, the original only group has a higher defection rate than the money only group.

To summarize:

1) Regardless of sex and API, interest in working with people leads students away from Physical Sciences.

2) Among the non-people-oriented students there is a sex difference in the values associated with choice of Physical Sciences.

> a) For non-people-oriented men, originality as an occupational value is associated with freshman choice, retention, and recruitment. Among low API men the pecuniary motivation plays some role in choice of Physical Sciences, but in both API levels it is the combination of low people, high originality which best predicts choice of science.
>
> b) For non-people-oriented women, making a lot of money as an occupational choice is associated with freshman choice, retention, and recruitment; originality *per se* does not apparently lead women toward these fields.

3) So few women fall into the money only group that their predilection for Science plays only a small role in the over-all trends for the field.

4) The value differences are such that there are no perfectly consistent API and sex differences. Women with the money only pattern are more likely to choose Physical Sciences than men with this pattern. At the same time, in most of the comparisons, women show a lesser tendency to choose Physical Sciences.

The movement of intellectual men and acquisitive women among the non-people-oriented is not the only migration important for Physical Sciences choices. Considering the background characteristics there is a clear-cut status difference during college [Table 4.7 d)]. There is no consistent SES difference between freshmen choosing Physical Sciences careers and freshmen opting for other fields, but for both defections and recruitment high status students show a trend away from Science and low status students show a trend toward it, regardless of sex, API, or values. For example, among high API men with the scientific values of low people, high original, 19 per cent of the low SES students defected as compared with 29 per cent of the high status students.

The SES differences are important, but difficult to assess. In terms of additional data, all that we know at the moment is that the trend cannot be explained in terms of interchanges with particular occupations. For those occupational fields showing net gains from Physical Sciences the turnover is positive for both SES levels, and when compared with Engineering, Physical Sciences show a net increase in both SES levels. There is an asymmetry for Medicine, Physical Sciences showing a net gain of low SES students and a net loss of high SES students, but the number is too small to account for the general SES trends.

In a way, the low status trend for Education made a certain amount of intuitive sense, since the ease of entry, low salary ceiling, and moderate prestige of teaching make it attractive to lower status students and less attractive to high status students. Similarly, the high status trends for Law and Medicine make sense in terms of the expensive training, high future incomes,

TABLE 4.7--Continued

d) SES and Choice of Physical Sciences

Sex	A.P.I.	Values		Per cent of Freshmen Choosing Physical Science		Per cent Defecting		Per cent Recruited	
		People	O&C	SES Low	SES High	SES Low	SES High	SES Low	SES High
Male	High	-	+	16.9 (1,872)	17.2 (2,481)	19.2 (317)	29.4 (428)	8.0 (1,555)	7.6 (2,053)
		-	-	6.6 (1,390)	8.0 (1,291)	35.9 (92)	66.0 (103)	3.9 (1,298)	3.0 (1,188)
		+	any	5.8 (2,555)	6.6 (3,454)	60.8 (148)	79.7 (227)	2.4 (2,407)	1.0 (3,227)
	Low	-	+	10.4 (1,525)	9.2 (1,321)	26.4 (159)	32.8 (122)	7.9 (1,366)	6.8 (1,199)
		-	-	6.2 (2,145)	4.9 (1,450)	55.6 (133)	67.6 (71)	4.6 (2,012)	2.1 (1,379)
		+	any	4.0 (3,042)	3.3 (2,663)	79.8 (89)	79.3 (121)	0.9 (2,921)	0.5 (2,574)
Female	High	-	+	13.8 (595)	13.1 (1,233)	42.7 (82)	52.8 (161)	5.3 (513)	3.2 (1,0[illegible])
		-	-	5.9 (626)	9.7 (888)	- (37)	41.9 (86)	2.7 (589)	2.9 (802)
		+	any	3.2 (2,686)	3.1 (4,748)	78.8 (85)	87.9 (149)	0.3 (2,601)	0.9 (4,599)
	Low	-	+	8.1 (285)	8.1 (393)	- (23)	- (32)	0.4 (262)	1.1 (361)
		-	-	5.6 (556)	5.2 (462)	- (31)	- (24)	2.1 (525)	2.0 (438)
		+	any	1.6 (1,977)	1.0 (2,088)	- (32)	- (20)	0.1 (1,945)	0.0 (2,068)

N = ...	41,726
NA, SES	4,242
NA, Not Included . . .	10,696
Total Weighted N = . .	56,664

and high prestige. The key fact missing, of course, is whether low SES students are more often "pulled" to science or high SES students "pushed from" it; but either way the findings on SES and Physical Sciences appear odd, given the high prestige, high incomes, and necessity of advanced training for physical scientists. When it is remembered that these are college year trends, not long term ones (there is no SES difference in freshman choice) the matter becomes more of a mystery.

Whatever the reason, SES along with sex, API and values plays a part in the differentiation of seniors choosing Physical Science careers [Table 4.7 e)]. Although we have seen that their effects are not continuous and interact with each other, at graduation each factor contributes to the prediction of choice of Physical Sciences. From the most physical science prone (high API, high original, low people, low SES men) where 20 per cent choose these fields to the least physical science prone (high SES, low API, people-oriented women) with a figure of 0.5 per cent, there is a steady progression of differences for each factor.

Summarized in terms of weighted net percentage differences in Table 4.7 e), the factors come out as follows:

Item	Difference	Net Difference
Values	I - II	8.0
Values	II - III	4.6
Sex	Male - Female	3.0
API	High - Low	2.4
SES	High - Low	-1.2

Again values and sex make the strongest net contributions to senior choices, the difference between the low people, high original versus low people, low original being greater than the sum of the effects for sex, API and SES. It is also seen that the low SES trend for Physical Sciences produces a weighted net effect of only one per cent.

TABLE 4.7--Continued

e) Values, SES, Sex, A.P.I., and Senior Choice of Physical Sciences

(Per cent of Seniors Choosing Physical Sciences)

Values		A.P.I.	Sex			
			Male		Female	
			SES		SES	
People	Original		Low	High	Low	High
-	+	High	20.3 (1,872)	18.5 (2,481)	12.4 (595)	8.9 (1,233)
		Low	14.8 (1,525)	12.3 (1,321)	1.8 (285)	6.4 (393)
-	-	High	7.9 (1,390)	5.5 (1,291)	7.5 (626)	8.2 (888)
		Low	7.1 (2,145)	3.6 (1,450)	4.7 (556)	4.5 (462)
+	any	High	4.5 (2,555)	2.3 (3,454)	0.9 (2,686)	1.3 (4,748)
		Low	1.6 (3,042)	1.2 (2,663)	0.7 (1,977)	0.5 (2,088)

N = ... 41,726
NA SES 4,242
NA, Not Included 10,696

Total Weighted N = ... 56,664

Examining the same factors in terms of net gain and loss, it is found that unlike some previous examples, the net effects show the same trends as the correlation analyses [Table 4.7 f)]. In fact, despite the high loss rates for the field in general, it is possible to locate subgroups which show net increases between freshman and senior year. Women in all value, API, and SES groups show losses, but among high SES men who are high on original and low on people there is a net increase, and among low SES men who are low on people there is a net increase. The importance of SES is underlined here. Although among people-oriented students both SES groups show net losses and among original, non-people males both SES levels show gains, in the middle value group low SES men show a gain, while high SES men show a loss. The importance of SES is clearly less than that of values and sex, but if high SES men showed the same turnover data as low SES men, the total loss of physical scientists would drop two-thirds.

Table 4.7 g) summarizes the comparisons with other fields where students aiming for Physical Science careers show a 10 per cent higher or lower proportion possessing a given attribute. Values seem to be the most frequent differentiator, the high originality, and low people interest of scientists setting them off from most other occupations. It should be noted, however, that their originality percentage is lower than Humanities, fewer physical scientists being concentrated in the "purely intellectual" value group of original only. In terms of money, the scientists are higher than most fields, but lower than Law and Business. The SES trends noted above mean that at graduation physical scientists are set off as lower in SES than social scientists, those in Humanities, biological scientists, lawyers, and physicians.

One pattern of non-difference should be noted, however. Only two items, sex and API, distinguish engineers and physical scientists in Table 4.7 g). The physical scientists have more women and high academic performance records, but in terms of values and family background, the two fields are quite similar.

TABLE 4.7--Continued

f) Net Turnover in Physical Sciences (Recruits Minus Defectors)

I. Turnover by Sex, A.P.I., SES, and Values

Values		A.P.I.	Sex				Total Male and Female
			Male		Female		
			SES		SES		
People	Original		Low	High	Low	High	
+	any	High	- 32	-149	- 60	- 89	-330
		Low	- 71	- 58	- 19	- 9	-157
-	-	High	+ 18	- 32	+ 10	- 13	- 17
		Low	+ 19	- 20	- 5	- 3	- 9
-	+	High	+ 63	+ 31	- 8	- 51	+ 35
		Low	+ 66	+ 41	- 18	- 7	+ 82
Total . . .		. . .	+ 63	-187	-100	-172	-396

II. Turnover by Sex, SES, and Values

Values		Sex				Total Male and Female
		Male		Female		
		SES		SES		
People	Original	Low	High	Low	High	
+	any	-103	-207	- 79	- 98	-487
-	-	+ 37	- 52	+ 5	- 16	- 26
-	+	+129	+ 72	- 26	- 58	+117
Total		+ 63	-187	-100	-172	-396

III. Turnover by Sex, SES, A.P.I., and Values

Sex

Male	-124
Female	-272
Total	-396

SES

High	-359
Low	- 37
Total	-396

A.P.I.

High	-312
Low	- 84
Total	-396

Values

People	Original	
+	any	-487
-	-	- 26
-	+	+117
Total		-396

TABLE 4.7--Continued

g) Characteristics Showing a 10 Per cent or Greater Difference Between Physical Sciences and Other Fields

Characteristic	Field								
	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law.	Med.	Engin.
Sex - Male	+		+	+	+	+	-	-	-
A.P.I. - High . . .	+	+				+		-	+
Values - People . .	-	-	-	-		-	-	-	
Money . .	+	-	+	+	+	+	-		
Original .	+	+		-	+	+	+	+	
SES - High			-	-	-		-	-	
Hometown - Larger .	+					+			
Religion - Protestant	-					-	+	+	
Catholic .									
Jewish . .								-	

+ = the per cent of seniors in Physical Sciences possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

In summary:

1) The occupational values of physical scientists present a complicated picture. Across the board, this field attracts students who are not people-oriented. Among the non-people-oriented, for men originality adds to choice of Physical Sciences, but among women the small number of money-oriented girls are more likely to choose science. The general trend, however, is for choice of science to be associated with the pattern: low people, high original and creative.

2) Generally speaking, but not in all value combinations, men are more attracted to Physical Sciences than women. The big difference between the sexes, however, comes from the association between sex and values, women being extremely unlikely to have physical science prone values.

3) Freshmen choosing Physical Sciences are more likely to end up as high academic performers, although API is not related to defection and recruitment during college. At graduation, the physical scientists are still distinguished by higher API percentages.

4) SES is unrelated to freshman choice, but during college, low status students are more likely to remain in science and to shift into it, for reasons which are unknown at this writing.

5) Although Physical Sciences fields do show a decline over the four years, among men with appropriate values, and particularly low SES men, there are net increases. Conversely, the losses to Physical Sciences are pretty much concentrated among the women and people-oriented students.

Medicine[4]

In America and most modern nations, physicians are near the top when occupations are rated in terms of prestige. The often cited North-Hatt survey of U.S. opinion in 1947 placed this occupation second in prestige, below U.S. Supreme Court Justice and tield with State governor.

Despite all this, those concerned with the recruitment of physicians have become increasingly worried about the supply of future M.D.'s. Although exact data are hard to come by, it is the impression of many medical educators that interest in this field is declining compared with the early post-World War II years.

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[4] Jacob J. Feldman, Director of Research at NORC, is currently completing an extensive analysis of choice of Medicine, which will be reported separately.

While the information in this study concerns only one year, and provides little illumination on questions of historical change, our data have shown a strong net movement out of Medicine during the four years of college for our sample of June, 1961 graduates. There is no evidence that this attrition is greater or less than in the past, but we shall be most interested in pinpointing the groups with greater and lesser interest in this critical field.

As in the case of Law, coefficients are plentiful [Table 4.8 a)]. Every single item on the list shows at least one noteworthy association with choice of Medicine, and four of the items show noteworthy associations with four of the aspects of choice.

At graduation, aspirant physicians are most differentiated in terms of being male (Q = +.790), high on API (Q = +.578), Jewish (Q = +.541), and high in SES (Q = +.390). Let us now see how they got that way, beginning with freshman choice.

Table 4.8 b) shows the association between values and reported freshman choice of Medicine. The differences are not very strong, no group reporting less than 3.7 per cent and none reporting more than 7.1 per cent. There is some concentration in the people only and people and money sectors, although Table 4.8 a) tells us that none of the three value items has a notable association with freshman choice of Medicine, the only field for which this is true. Part of this negative finding may come from the fact that Medicine is so glamorous that many freshmen have unrealistic aspirations for this career. Another part stems from the fact that, somewhat like Physical Sciences, there is a sex differentiation in the factors associated with Medicine. That is, variables have different effects on choice of Medicine among men than they do among women.

Table 4.8 c) shows that when men are considered separately and API is introduced as a control, there are some value differences for freshman choice. The people-oriented freshman was much

TABLE 4.8

CORRELATES OF CAREER CHOICE OF MEDICINE

a) "Q" Coefficients of Choice of Medicine

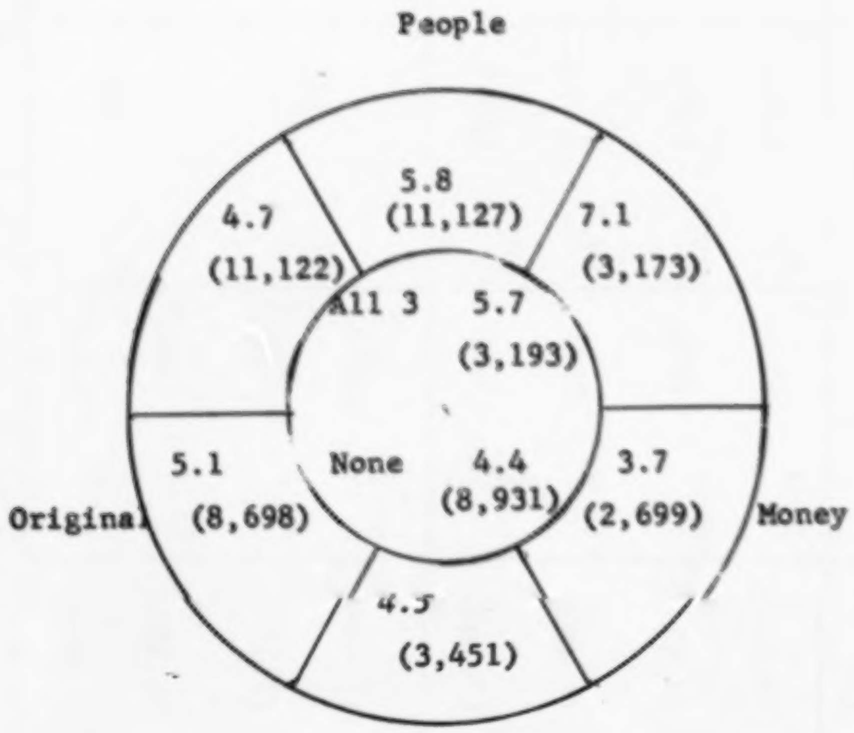
Variable	Freshman	Retention	Recruitment	Senior
Sex - Male	+.513	+.677	+.726	+.790
A.P.I. - High	+.254	+.545	+.622	+.578
Religion - Jewish . .	+.405	+.364	+.519	+.541
SES - High	+.377	*	+.488	+.390
Religion - Protestant.	-.236	-.262	-.160	-.323
Hometown - Larger . .	+.217	+.183	*	+.267
Values - People . . .	*	+.271	+.237	+.244
Race - Negro	*	-.305	-.813	-.480
Values - Original . .	*	-.356	-.319	-.263
Values - Money	*	-.254	*	*
Religion - Catholic .	*	*	-.174	*

* = +.15 > Q > -.15.

TABLE 4.8--Continued

b) Values and Freshman Choice of Medicine

(Per cent Choosing Medicine)


People
5.8
(11,127)
4.7
(11,122)
7.1
(3,173)
All 3
5.7
(3,193)
5.1
(8,698)
None
4.4
(8,931)
3.7
(2,699)
Original
Money
4.5
(3,451)

N = ...	52,394
NA Field	3,147
NA Values	1,015
NA Both	108
Total Weighted N = .	56,664

TABLE 4.8--Continued

c) Values, A.P.I., and Choice of Medicine by Sex

Sex	Values		Per cent of Freshmen Choosing Medicine		Per cent Defecting Among Freshmen Choosing Medicine		Per cent Recruited to Medicine Among Freshmen Choosing Other Fields	
			A.P.I.		A.P.I.		A.P.I.	
	People	Original	High	Low	High	Low	High	Low
Male	+	-	15.3 (2,986)	7.1 (3,632)	21.4 (457)	67.7 (257)	3.7 (2,529)	0.7 (3,375)
	+	+	11.3 (3,404)	5.9 (2,454)	45.7 (383)	75.9 (145)	2.5 (3,021)	0.2 (2,309)
	-	-	7.1 (2,948)	4.6 (3,883)	42.9 (210)	69.7 (178)	1.4 (2,738)	0.2 (3,705)
	-	+	7.1 (4,886)	4.3 (3,146)	50.9 (346)	87.3 (134)	1.0 (4,540)	0.2 (3,012)
Female	+	-	3.0 (3,437)	1.2 (2,401)	60.2 (103)	82.5 (63)	0.1 (3,334)	0.3 (2,371)
	+	+	2.9 (4,628)	1.4 (2,285)	88.1 (135)		0.2 (4,493)	0.3 (2,252)
	-	-	3.3 (1,795)	1.7 (1,298)	81.7 (60)	85.7 (63)	0.3 (1,735)	0.1 (1,276)
	-	+	3.6 (1,972)	5.0 (813)	80.3 (71)		0.4 (1,901)	0.0 (772)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

more likely to choose Medicine, but original and creative makes no difference. Turning then to the dynamics of choice during college:

a) API has a very strong effect. Regardless of values two-thirds or more of the low API men abandon Medicine, and regardless of values half or more of the high API men retain their freshman preference for Medicine. Similarly, recruits to Medicine are more often high API than low. In the previous chapter it was shown how this API effect produces a striking increase in the API levels of aspiring physicians from the freshman to the senior year.

b) Within each API group, people-oriented men show an attraction for Medicine for both recruitment and retention.

c) Although it was unrelated to freshman choice of Medicine, original and creative as an occupational value has a negative relationship with choice of Medicine for decisions made during college. Particularly striking is the swath this value cuts through a group otherwise high on choice of Medicine, the high API men who are people-oriented. For those in this group who do not endorse originality, the defection rate is 21 per cent, but for those who want opportunities to be original and creative, the loss amounts to 46 per cent.

Within that less predictable sex, women, things are different and far less clear-cut. Considering values first, for freshman choice, originality has a positive effect and people makes no difference; for retention, people has a benign effect, but originality makes no difference, and female recruitment is so infrequent that the percentages in every cell for recruitment are less than one. Turning to API, the association between superior academic performance and choice of Medicine holds for retention and freshman choice. Perhaps the best way to summarize these inconsistent relationships is as follows: although values are unrelated to freshman choice of Medicine for women, after four years about the only women in Medicine are high API, people-oriented, freshman choosers, defection rates being over 80 per cent for low API women and high API women who are not people-oriented, and recruitment to Medicine being nil.

Sex itself is a factor, independent of values and API. Loss rates for women are much higher and recruitment rates for women are much lower, when compared with men similar in API and values.

As in the case of Law, Medicine is characterized by more relationships with family background factors than most other fields. Considering zero order coefficients for freshman choice [Table 4.8 a)], it is seen that religion, SES, and hometown all have associations. In Table 4.8 d) the simultaneous effects of these three characteristics are shown, controlling for API and values. SES and religion show independent effects, but there is no consistent city size effect, its zero order relationship being a product of the high SES levels and religious composition of the big cities. At the same time, in all but a few comparisons Catholics have higher rates of freshman choice than do Protestants, and Jews have higher rates than either, regardless of SES, API, city size and values. These social background factors have more than a little impact. Among high API men with the medical values of people and not original, 36 per cent of the larger city high SES Jews chose Medicine as freshmen as compared with 7.7 per cent of the small town, low SES, Protestants.

The women do not follow the lead of the men. Religion makes no consistent difference in their choices and both high SES and larger hometowns are associated with more frequent choice of Medicine. Why city size should affect women but not religion, while the reverse is true for men is somewhat of a mystery, but there are even more complications to come.

TABLE 4.8--Continued

d) Index of Background Characteristics, A.P.I., Values, and Freshman Choice of Medicine

(Per cent of Freshmen Choosing Medicine)

I. Men

A.P.I.	SES	Hometown	Values							
			People, Not Original				Other			
			Race				Race			
			Negro	White			Negro	White		
				Religion				Religion		
				Protestant	Catholic	Jewish		Protestant	Catholic	Jewish
High	High	Larger		20.4 (392)	21.0 (276)	36.0 (178)		9.6 (1,696)	10.5 (811)	18.1 (746)
		Smaller		12.4 (506)	25.7 (113)	- (24)		9.4 (1,644)	13.6 (374)	31.6 (95)
	Low	Larger		8.1 (172)	11.0 (228)	22.8 (92)		4.0 (840)	6.9 (815)	10.4 (309)
		Smaller	25.6 (78)	7.7 (543)	3.6 (138)	- (2)	9.3 (182)	3.6 (1,836)	4.7 (534)	- (31)
Low	High	Larger		9.2 (358)	10.1 (257)	27.1 (118)		6.5 (904)	5.3 (678)	10.1 (286)
		Smaller		8.1 (480)	9.1 (175)	- (15)		7.5 (1,264)	7.4 (457)	7.5 (53)
	Low	Larger		3.0 (270)	6.0 (298)	9.8 (61)		2.1 (624)	3.4 (797)	3.2 (222)
		Smaller	10.1 (79)	3.8 (915)	5.2 (229)	- (8)	11.1 (289)	3.1 (2,119)	2.9 (681)	- (17)

N =	24,309
Women	15,603
Negroes	693
NA, Freshman or Future Career	9,573
NA Values and/or A.P.I.	1,123
NA Background	5,363
Total Weighted N =	56,664

TABLE 4.8 d)--Continued

(Per cent of Freshmen Choosing Medicine)

II. Women

Background		A.P.I.			
		High		Low	
		Values		Values	
		Other	People, Not Original	Other	People, Not Original
Hometown	SES				
Larger	High	4.3 (2,567)	3.6 (841)	3.2 (862)	0.9 (437)
	Low	3.7 (1,025)	4.1 (411)	2.4 (588)	1.6 (316)
Smaller	High	3.1 (2,081)	2.6 (878)	2.5 (983)	1.0 (505)
	Low	1.9 (1,514)	1.2 (824)	1.3 (1,111)	0.2 (660)
			N = ... 15,603		
Religion					
Jewish		4.1 (776)	1.0 (192)	1.6 (257)	1.1 (87)
Catholic		4.7 (1,651)	3.7 (760)	3.3 (927)	0.8 (489)
Protestant		2.8 (4,760)	2.5 (2,002)	1.9 (2,360)	0.7 (1,342)

N = ...	15,603
Negroes	693
Men	24,309
NA, Freshman or Future Career . .	9,573
NA, Values and/or A.P.I.	1,123
NA, Background	5,363
Total Weighted N = ...	56,664

When the relationship between IBC items and defection from freshman choice of Medicine among men is examined, controlling for API and values [Table 4.8 e)], a minor mystery develops. There is a considerable religious difference, Jews having very low defection rates and Protestants high ones with Catholics in the middle. For example, among low API men with favorable values, 79 per cent of the Protestants, 61 per cent of the Catholics, and 46 per cent of the Jews leave Medicine. However, there is now a hometown difference, students from small towns showing higher defection rates than students from large ones, and SES, if anything, reverses, high SES students showing slightly higher defection rates.

A tabulation based only on the IBC items [Table 4.8 f)] suggests that the explanation of the hometown difference lies in the remarkable retention rates of a particular group--Catholics and Jews from the larger cities. For Protestants of every city size and SES and for Catholics and Jews from smaller hometowns, defection rates are very close to 55 per cent; but for big city Catholics, regardless of SES, the loss rate is around 40 per cent, and for big city Jews it is around 30 per cent. The concentration of Jews and Catholics in the big cities produced the over-all city size difference in retention. Examination of the women in the same table suggests an SES difference, defections being higher among girls from high SES families, but no religious or city size effects.

Lastly, let us consider recruitment among men, too few women being recruited to justify tabulation of their characteristics. Table 4.8 g) tells us that very few students shift into Medicine after the freshman year, but that such decisions are more common for students: a) from high SES families, b) who are Jewish, c) who come from small towns. Catholics show no consistent advantage in recruitment when compared with Protestants.

The general methodological principle which has been underlying our whole report is underlined by these results. When considering a process over time, the net result is the consequence

TABLE 4.8--Continued

e) Index of Background Characteristics, A.P.I., Values, and Defection from Medicine Among Men

(Per cent Defecting Among Freshman Men Choosing Medicine)

Background	A.P.I.			
	High		Low	
	Values		Values	
	People, Not Original	Other	People, Not Original	Other
Religion				
Protestant	24.6 (199)	53.7 (417)	79.1 (115)	76.8 (233)
Catholic	12.0 (117)	46.0 (217)	61.1 (72)	76.9 (117)
Jewish	10.6 (94)	36.7 (199)	46.2 (39)	- (40)
SES				
High	18.2 (303)	48.1 (617)	69.2 (146)	76.6 (257)
Low	16.8 (107)	46.3 (216)	65.0 (80)	76.7 (133)
Hometown				
Larger	14.1 (262)	45.0 (504)	61.0 (123)	75.4 (171)
Smaller	24.3 (148)	51.7 (329)	75.7 (103)	77.6 (219)

N = ...	1,859
Recruits and Freshmen choosing Other Fields	21,822
Negroes	1,321
Women	15,603
NA, Freshman/Future Career . . .	9,573
NA, Values and/or API	1,123
NA, Background	5,363
Total Weighted N = ...	56,664

TABLE 4.8--Continued

f) Index of Background Characteristics and Defection from Medicine (Per cent Defecting Among Freshmen Choosing Medicine)

Hometown	SES	Negro	Religion			
			Protestant	Catholic	Jewish	Total
			Men			
+	+		55.4 (334)	40.5 (205)	33.1 (260)	44.3 (799)
+	-		59.4 (69)	42.9 (126)	28.8 (66)	43.7 (261)
-	+		56.4 (351)	56.9 (130)	[55.8 (43)]	56.5 (524)
-	-	67.5 (77)	56.7 (210)	59.7 (62)	- (3)	57.4 (275)
			56.3 (964)	47.4 (523)	35.2 (372)	N = 1,936
			Women			
+	+		91.1 (90)	81.1 (53)	[90.6 (32)]	88.0 (175)
+	-		- (18)	[72.9 (48)]	- (4)	80.0 (70)
-	+		84.4 (90)	[87.5 (24)]	- (3)	85.5 (117)
-	-	- (14)	[66.7 (39)]	- (15)	- (0)	70.4 (54)
			85.2 (237)	79.3 (140)	[89.7 (39)]	N = 430

N = ...	2,366
Recruits and Freshman Choosing Other Fields	38,239
NA, Freshman/Future Career	9,573
NA, Values and/or API	1,123
NA, Background	5,363
Total Weighted N = ...	56,664

[ ] = Case base < 50.

TABLE 4.8--Continued

g) Index of Background Characteristics and Recruitment Among Men

(Per cent Recruited Into Medicine Among Men Choosing Other Fields as Freshmen)

A.P.I.	SES	Values*	Hometown	Religion						
				Protestant		Catholic		Jewish		
					Total		Total		Total	
High	High	+	Smaller	5.4 (443)		4.8 (84)		- (15)		
			Larger	6.7 (312)	6.0 (755)	3.7 (218)	4.0 (302)	9.6 (114)	10.1 (129)	
		-	Smaller	2.2 (1,490)		1.5 (323)		6.2 (65)		
			Larger	1.6 (1,534)	1.9 (3,024)	0.8 (726)	1.0 (1,049)	5.1 (611)	5.2 (676)	
	Low	+	Smaller	1.6 (501)		2.3 (133)		- (2)		
			Larger	0.6 (158)	1.4 (659)	2.0 (203)	2.1 (336)	2.8 (71)	4.1 (73)	
		-	Smaller	0.6 (1,769)		1.4 (509)		- (29)		
			Larger	0.6 (806)	0.6 (2,575)	0.4 (759)	0.8 (1,268)	1.8 (277)	1.6 (306)	
Low	High	**	Smaller	→	↓	→	↓	→	↓	0.8 (2,256)
			Larger	→		→		→		0.3 (2,386)
	Low		Smaller	→		→		→		0.1 (3,835)
			Larger	→		→		→		0.4 (2,193)
					0.3 (6,586)		0.2 (3,383)		1.3 (701)	

N =	21,822
No change in Choice of Medicine as Freshmen and Defectors	1,859
Negroes	1,321
Women	15,603
NA, Freshman or Future Career	9,573
NA, Values and/or A.P.I.	1,123
NA, Background	5,363
Total Weighted N =	56,664

+ = People, Not Original
- = Other
** = Values omitted because of small number of cases.

of a large number of transition situations, not all of which have to be consistent by any means. Even though we will see some simple and clear-cut differences between seniors choosing Medicine and the rest of the class of 1961, it is now obvious that these are the result of the balance between forces operating in several directions. Let us try to review these complicated findings:

1) API is a consistent factor in choice of Medicine. For freshman choice, retention, recruitment and, regardless of other characteristics, high academic performance is associated with movement toward a medical career.

2) Sex is equally consistent. In each analysis, women are less attracted to Medicine.

3) The value of wanting to work with people is predictive of the choice of Medicine, but only among men. People orientation is associated with retention for women, but not with freshman choice or recruitment.

4) The value of wanting opportunities to be original and creative is negatively related to choice of Medicine, but only for retention and recruitment among men. Among men it shows only a low relationship with freshman choice, and among women it is, if anything, positively related to choice of Medicine.

5) High SES levels tend to be associated with choice of Medicine, but there are exceptions. Among men high SES is associated with freshman choice and recruitment, but not retention. Among women there is a high SES trend for recruitment and retention, but there are too few women shifting into Medicine to analyze its role in recruitment.

6) Religion makes a difference among men, but not among women. Among men, Jews are highest on freshman choice, retention (among those from larger cities), and recruitment. Compared with Protestants, Catholics tend to be slightly higher on freshman choice and retention (among big city students) but there is no Protestant-Catholic difference in recruitment.

7) City size is the most erratic variable. For men it is unrelated to freshman choice, associated with higher retention rates but only for Catholics and Jews, and associated with lower recruitment rates. Among women, being from a big city is associated with freshman choice and retention.

When we examine percentage differences in the number of seniors choosing medicine we can see the net result of all these contradictory trends. What basically happens is that the value, sex, API, SES and religious differences come through at graduation, while the city size effects cancel each other out. Table 4.8 h) shows how each of these factors relates to choice of Medicine producing a range from 38 per cent going into Medicine for Jewish males with high API, people and not original values, and high SES backgrounds, to less than one-half of one per cent among low status, low SES females who are not high people, low original.

Table 4.8 h) also gives the percentages for Negro students who were not considered in the previous discussion. Although the Q coefficients suggest that Negroes shy away from Medicine during college (negative Q's for retention, recruitment, and senior choice) their percentages at graduation are usually higher than low status Protestants. Thus, it is apparently the Negroes' low API, SES, and Protestantism which produces the negative associations.

The relative effects of the various characteristics are summarized in the following table by means of weighted net percentage differences in Table 4.8 h) for male students.

Weighted Net Percentage Differences
for Senior Choice of Medicine

Item	Difference	Net Difference
Values	High People, Low Original minus All Other	6.2
Religion	Jewish minus Catholic	6.4
A.P.I.	High minus Low	6.0
SES	High minus Low	3.5
Religion	Catholic minus Protestant	1.1

Three of the variables, Values, API, and Religion, all produce differences close to six per cent. The Catholic advantage over Protestants in choice of Medicine is seen here to be the least strong difference and much less than the Jewish versus Catholic comparison.

TABLE 4.8--Continued

h) Index of Background Characteristics, A.P.I., Values, and Senior Choice of Medicine

(Per cent of Seniors Choosing Medicine)

Sex	A.P.I.	Values		SES	Negro	Religion		
		People	Original			Protestant	Catholic	Jewish
Male	High	+	-	High		17.3 (898)	22.4 (389)	38.6 (202)
				Low	10.3 (78)	7.1 (715)	9.6 (366)	23.4 (94)
		Other		High		6.1 (3,340)	6.7 (1,185)	16.5 (841)
				Low	6.6 (182)	2.3 (2,676)	4.4 (1,349)	7.9 (340)
	Low	+	-	High		3.3 (838)	3.5 (432)	12.0 (133)
				Low	0.0 (79)	0.7 (1,185)	3.4 (527)	13.0 (69)
		Other		High		1.8 (2,168)	1.9 (1,135)	3.2 (339)
				Low	1.7 (289)	0.9 (2,743)	0.4 (1,478)	1.7 (239)
Female	High	+	-	any	1.0 (3,038)			
		Other		any	0.7 (7,414)			
	Low	+	-	any	0.2 (2,035)			
		Other		any	0.4 (3,809)			

N = ... 40,605
NA, Freshman or Future Career 9,573
NA, Values and/or A.P.I. 1,123
NA, Background 5,363

Total Weighted N = ... 56,664

Reviewing the data in terms of net turnover [Table 4.8 i)], it is seen that as in the case of Physical Sciences, the over-all losses to Medicine during the college years come from high losses among certain types of students and slight gains among others. There is no subgroup in Table 4.8 i) which shows a whopping increase in physicians, but among the men with appropriate characteristics (high API, high people, low original), there is a slight increase, particularly among the high SES groups. For women and for all students with the "wrong" values and/or low API's, defections from Medicine far from outweigh recruits. It should also be noted that, while social characteristics are associated with the dynamics of choice for Medicine, there is no religious or SES group which shows a net gain across the board.

Table 4.8 j) reviews the comparisons between seniors choosing Medicine and those entering other fields. Medicine is shown to be the highest API field of them all, being 10 per cent or greater higher in its proportion of successful academic performers compared with every other field. Except for lawyers, whose similarity to physicians was noted previously, future M.D.'s differ from all the other occupations in terms of their social origins. However, in terms of values, the physicians are quite similar to Education and Other Professions.

Taken together, all these materials suggest that Medicine, even more than Law, is subject to a sort of internal inconsistency. We have noted in the discussion of Law that generally, the social groups which lean toward a given occupation tend to have the values congruent with that occupation even though the values do not explain the social differences. Thus, men are more interested in money than women, men more often choose business careers and money-oriented students more often choose business careers. In the case of Law we noted an exception, the opposing tugs of high API and low originality as factors in choice of legal careers.

TABLE 4.8--Continued

i) Net Turnover for Medicine

(Recruits Minus Defectors)

Values		A.P.I.	SES	Sex									
				Male						Total Male		Female	Total Male and Female
				Religion									
People	Original			Jewish		Catholic		Protestant					
					Total		Total		Total		Total		
+	-	High	High	+ 5		0		+ 10		+ 15			
			Low	+ 1	+ 6	+ 5	+ 5	- 5	+ 5	+ 1	+ 16	- 54	- 38
		Low	High	- 16		- 27		- 44		- 87			
			Low	+ 2	- 14	- 12	- 39	- 35	- 79	- 45	-132	- 11	-143
Other		High	High	- 26		- 57		-111		-194			
			Low	- 7	- 33	- 22	- 79	- 40	-151	- 69	-263	-194	-457
		Low	High	- 22		- 48		-115		-185			
			Low	- 3	- 25	- 41	- 89	- 54	-169	- 98	-283	- 71	-354
Total					- 66		-202		-394		-662	-330	-992

TABLE 4.8--Continued

j) Characteristics Showing a 10 Per cent or Greater Difference Between Medicine and Other Fields

Characteristic	Field								
	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law.	Phy. Sci.	Engin.
Sex - Male	+		+	+	+	+		+	
A.P.I. - High	+	+	+	+	+	+	+	+	+
Values - People		+		+	+			+	+
Money		-					-		-
Original			-	-	-			-	-
SES - High	+	+	+		+	+		+	+
Hometown - Larger	+				+	+			+
Religion - Protestant . . .	-	-	-	-	-	-		-	-
Catholic									
Jewish	+	+		+	+	+		+	+

+ = the per cent of seniors in Medicine possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

A case can be made that this "inconsistency" is highly characteristic of Medicine. In terms of personal characteristics the student attracted to Medicine tends to be male (and males tend to be high on money, low on people), high API (high API students tend to be high on originality) and higher in SES (high SES students tend to be more interested in making money) but the values which are associated with Medicine are working with people, and lack of interest in originality.

Consider the following table:

API	Men		Women	
	High	Low	High	Low
People Original				
+ -	21.0	27.7	29.0	35.3
Other	44.7	48.3	54.3	52.8
- +	34.3	24.0	16.7	11.9
Total . .	100.0%	100.0%	100.0%	100.0%
N = . . .	14,224	13,115	11,831	6,797

The groups with the greatest attraction to Medicine have the smallest proportions with the occupational values conducive to Medicine. Thus, the broad tendency is for recruitment to Medicine to be a selection of service-oriented young people within the sub-populations of students most oriented not to service, but to intellectual or financial achievement.

Engineering

The final occupation to be analyzed is Engineering, it being placed at the end of the line not because it is unimportant but because it is the field which shows the greatest decline during the college years. Despite the advertisements for engineers, defection rates are very high for freshmen choosing Engineering and recruitment rates are very small.

The general pattern of the results is very similar to physical scientists (we noted previously how similar engineers and physical scientists are at graduation) but enough differences turn up to justify detailed examination of the results.

Table 4.9 a) gives us the Q coefficients, which tell us that engineers are distinguished by their masculinity, disinterest in people (in the special sense of not endorsing the item "opportunities to work with people rather than things"), interest in opportunities to be original and creative, and interest in money. We also note that there is a low SES trend, similar to that of Physical Sciences. The only new relationship is that for recruitment and at graduation Jewish students are relatively unlikely to be in Engineering.

The values of freshmen choosing Engineering are, as advertised, down in the bottom half of the value circle [Table 4.9 b)], the highest percentage in Engineering being for the pattern money and original. Originality and money both have positive associations with freshman choice of Engineering.

Table 4.9 c) shows the simultaneous effects of values, sex, and API on decisions regarding Engineering.

As the Q coefficients tell us, sex is the strongest correlate of Engineering. For freshman choice there is no cell with more than three per cent of the women choosing Engineering and no cell with less than 17 per cent of the men choosing Engineering. For retention, among the 80 women choosing Engineering, 75 per cent defected; and for recruitment, 0.0 per cent of the people-oriented women shifted into Engineering, a rate barely topped by the 0.2 per cent among non-people oriented girls. We do note that for freshman choice, rates are a little higher among the money-oriented, non-people girls, a situation much akin to that seen previously in Physical Sciences, but the over-riding fact is that Engineering is an all-male field, for all practical purposes.

TABLE 4.9

CORRELATES OF CAREER CHOICE OF ENGINEERING

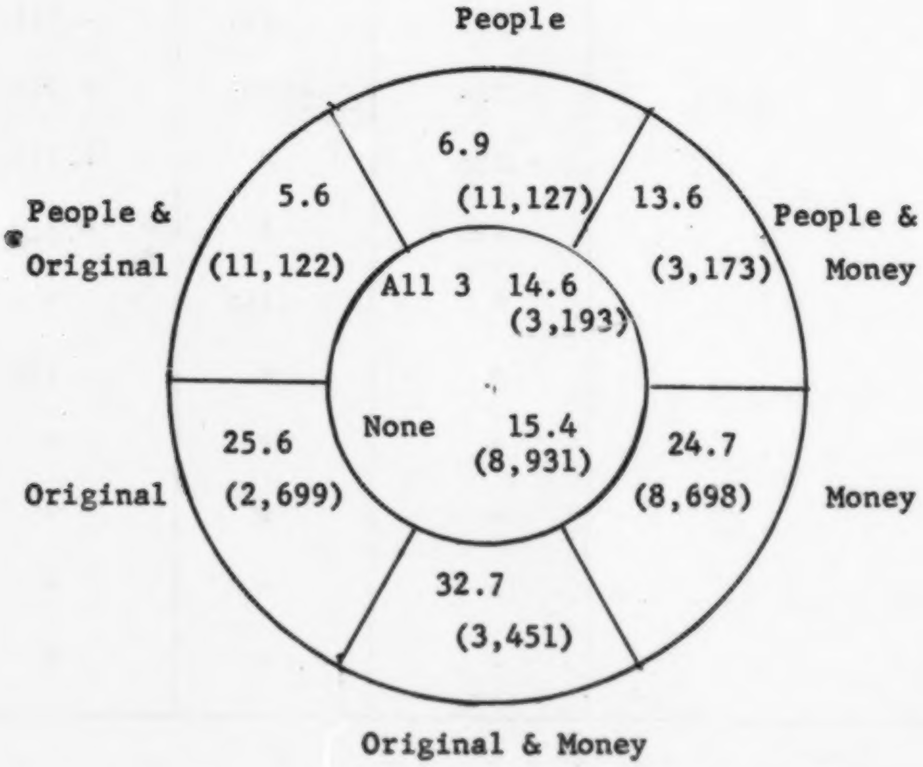
a) "Q" Coefficients for Choice of Engineering

Variable	Freshman	Retention	Recruitment	Senior
Sex - Male	+.977	+.544	+.916	+.979
Values - People	-.552	-.554	-.791	-.741
Original	+.146	+.327	+.314	+.311
Money	+.335	*	+.355	+.300
Race - Negro	-.428	*	+.312	-.294
SES - High	*	-.148	*	-.177
Religion - Jewish	*	*	-.196	-.165
A.P.I. - High	*	*	*	*
Hometown - Larger	*	*	*	*
Religion - Protestant	*	*	*	*
Catholic	*	*	*	*

* = +.15 > Q > -.15.

TABLE 4.9--Continued

b) Values and Freshman Choice of Engineering



N =	52,394
NA Field	3,147
NA Values	1,015
NA Both	108
Total Weighted N =	56,664

TABLE 4.9--Continued

c) Sex, A.P.I., Values, And Choice of Engineering

I. Per cent Choosing Engineering as Freshmen

Values			Sex			
			Male		Female	
People	Original	Money	A.P.I. Low	A.P.I. High	A.P.I. Low	A.P.I. High
+	any	any	17.5 (6,086)	16.8 (6,390)	0.2 (4,686)	0.3 (8,065)
-	-	-	26.0 (2,807)	27.1 (2,079)	0.4 (1,161)	0.5 (1,568)
-	+	-	41.1 (2,077)	35.4 (3,433)	0.3 (660)	0.8 (1,634)
-	+	+	41.5 (1,069)	42.5 (1,453)	2.6 (153)	1.5 (338)
-	-	+	33.5 (1,076)	32.8 (869)	2.9 (137)	2.6 (227)

N = ... 45,968
NA, Not Included 10,696
Total Weighted N = ... 56,664

II. Per cent Defecting Among Freshmen Choosing Engineering

Values			Sex		
			Male		Female
People	Original	Money	A.P.I. Low	A.P.I. High	
+	any	any	70.3 (1,067)	68.1 (1,075)	All Women 75.0 (80)
-	-	-	47.3 (731)	50.6 (563)	
-	+	-	35.1 (854)	32.0 (1,216)	
-	+	+	40.5 (444)	28.8 (617)	
-	-	+	50.8 (360)	48.8 (285)	

N = ... 7,292

TABLE 4.9 c)--Continued

III. Per cent of Freshmen in Other Fields Recruited to Engineering

Values			Sex		
			Male		Female
			A.P.I.		
People	Original	Money	Low	High	
+	any	any	0.5 (5,019)	0.6 (5,315)	0.0 (12,716)
-	-	-	2.2 (2,076)	1.6 (1,516)	All People No 0.2 (5,833)
-	+	-	5.0 (1,223)	3.3 (2,217)	
-	+	+	5.4 (625)	4.7 (836)	
-	-	+	1.8 (716)	3.6 (584)	

N = ... 38,676

Considering men only, the sub-tables of Table 4.9 c) show no API effects either for or against choice of Engineering. High and low API men show very similar percentages in every analysis of Engineering which has been tabulated, a finding which is a puzzle, since many other studies have shown engineers to have high scores on tests such as IQ measures which presumably correlate with API.

Turning then to values, the results are much like those for Physical Sciences: a) people-oriented men have low rates of freshman choice and recruitment, and high rates of defection; b) among the non-people oriented men, both originality and interest in money are associated with freshman choice, retention, and recruitment, the value type money and original having the most favorable percentages in each comparison. While it would be consoling to academic prejudices to infer that engineers were interested in money and physical scientists in originality, the fact is that both groups are disproportionately interested in originality and in money, and there is no important difference in their values.

Having examined sex, values, and API, we are ready to see whether multi-variate analysis supports the suggestion of the Q's that Jews, Negroes, and high SES students shun Engineering [Table 4.9 d)]. For freshman choice, Negro men, when matched with low SES whites of similar values and API, do show lower freshman choice of Engineering in five out of six comparisons, but SES and religion have no consistent relationships at the beginning of college. Turning to the two decisions made during college, Jews have slightly higher defection rates and lower recruitment rates when matched with Christians (Protestants and Catholics) similar in SES. Among both Christians and Jews, high SES students show greater rates of defection from Engineering, but there is no difference in recruitment. Although the SES difference appears only for retention and not for freshman choice or recruitment, defection rates play such an important role in

TABLE 4.9--Continued

d) A.P.I., Values, Index of Background Characteristics and Choice of Engineering Among Men Only

I. Per cent of Freshmen Choosing Engineering

A.P.I.	Values		SES	Race		
				Negro	White	
					Religion	
	People	Original			Jewish	Protestant and Catholic
High	-	+	Low	28.3 (53)	38.4 (146)	42.4 (1,653)
			High		23.7 (376)	35.3 (2,012)
	-	-	Low	11.1 (81)	24.0 (75)	30.8 (1,225)
			High		17.8 (152)	28.2 (1,065)
	+	any	Low	7.9 (126)	19.2 (213)	15.7 (2,228)
			High		13.0 (515)	18.5 (2,735)
Low	-	+	Low	54.1 (61)	39.2 (79)	41.8 (1,366)
			High		40.5 (111)	40.3 (1,142)
	-	-	Low	9.0 (167)	29.4 (85)	28.7 (1,869)
			High		22.9 (105)	28.7 (1,204)
	+	any	Low	4.3 (140)	17.4 (144)	18.3 (2,698)
			High		15.2 (256)	18.9 (2,227)

N = ...	24,309
Female	16,296
NA, Freshman, Future Career .	9,573
NA Values and/or A.P.I. . . .	1,123
NA, Background	5,363
Total Weighted N = ...	56,664

TABLE 4.9 d)--Continued

II. Per cent Defecting Among Freshmen Choosing Engineering
(Men Only)

A.P.I.	Values		SES	Race		
					White	
					Religion	
	People	Original		Negro	Jewish	Protestant and Catholic
High	-	+	High		44.9 (89)	33.9 (711)
			Low	- (15)	33.9 (56)	27.2 (701)
	-	-	High		- (27)	54.0 (300)
			Low	- (9)	- (18)	47.7 (377)
	+	any	High		76.1 (67)	70.4 (506)
			Low	- (10)	70.7 (41)	67.1 (350)
Low	-	+	High		- (45)	42.6 (460)
			Low	- (33)	- (31)	32.0 (571)
	-	-	High		- (24)	49.6 (345)
			Low	- (15)	- (25)	45.7 (536)
	+	any	High		- (39)	73.9 (421)
			Low	- (6)	- (25)	66.4 (494)

N =. 6,347

TABLE 4.9 d)--Continued

III. Per cent Recruited to Engineering Among Students Choosing Other Fields as Freshmen

A.P.I.	Values		SES	Race					
				Negro		White			
						Religion			
	People	Original				Jewish		Protestant and Catholic	
High	-	+	Low	-	(38)	4.4	(90)	4.8	(952)
			High			1.7	(287)	3.2	(1,301)
	-	-	Low	0.0	(72)	0.0	(125)	1.3	(848)
			High			0.0	(57)	3.8	(765)
	+	any	Low	0.0	(116)	0.6	(172)	0.6	(1,878)
			High			0.7	(448)	0.5	(2,229)
Low	-	+	Low	-	(28)	-	(48)	4.7	(795)
			High			1.5	(66)	4.5	(682)
	-	-	Low	11.2	(152)	1.7	(60)	1.3	(1,333)
			High			1.2	(81)	2.1	(859)
	+	any	Low	0.7	(134)	0.0	(119)	0.6	(2,204)
			High			0.0	(217)	0.3	(1,806)

N = ... 17,962

Engineering that there is a cumulative impact. Table 4.9 e) summarizes the senior correlates of Engineering. Values and sex are the most important predictors, but among men of a particular value grouping Jews in all but one comparison have lower percentages and in each comparison high SES students have lower percentages.

Summarizing in terms of weighted net percentage differences from Table 4.9 e) among men:

Weighted Net Percentage Differences for
Senior Choice of Engineering (Men Only)

Item	Difference	Net Difference
Values	Low People and High Original minus Low People and Low Original	13.0
Values	Low People and Low Original minus High People	9.7
SES	High minus Low	-2.8
Religion	Jewish minus Protestant and Catholic	-2.6

Values, as usual, make the greatest independent contribution with SES and religion producing net differences of about three per cent each in comparison with 13 per cent and 10 per cent for the two value comparisons. Because of the small number of women in Engineering they cannot be included in the net table, but as 15 per cent of the men in Table 4.9 e) choose Engineering in comparison with 0.2 per cent of the women, sex must be considered a major factor in the list of predictors. Even comparing women with the men least likely to choose Engineering (high SES, people-oriented Jews) there is a difference of 5.1, which is greater than the effect of SES or religion among the men.

The substantial percentage differences shown in these tables are not sufficient to explain the net trends for Engineering. Table 4.9 f) tells us that there are net losses in every value, SES,

TABLE 4.9--Continued

e) Sex, Values, Index of Background Characteristics and Senior Choice of Engineering
(Per cent of Seniors Choosing Engineering)

Sex	Values		SES	Race		
					White	
					Religion	
	People	Original		Negro	Jewish	Protestant and Catholic
Male	-	+	Low	29.8 (114)	28.0 (225)	32.3 (3,019)
			High	- (-)	17.2 (487)	25.6 (3,134)
	-	-	Low	8.5 (348)	12.5 (160)	16.7 (3,094)
			High	- (-)	8.6 (237)	15.8 (2,260)
	+	any	Low	6.3 (284)	5.0 (357)	8.2 (4,926)
			High	- (-)	4.0 (771)	5.6 (4,962)
Female	any	any	any	0.2 (16,296)		

N = ... 40,605
NA, Freshman or Future Career . 9,373
NA, Values and/or A.P.I. . . . 1,123
NA, Background 5,363
Total Weighted N = ... 56,464

TABLE 4.9--Continued

f) Net Turnover for Engineering Among Men Only

(Recruits Minus Defectors)

Values		SES	Race			Total
			White		Negro	
			Religion			
People	Original		Protestant and Catholic	Jewish		
-	+	High	-365	-50	-14	- 744
		Low	-291	-24		
+ -	+ -	High	-286	-29	- 3	- 738
		Low	-397	-23		
+	-	High	-649	-75	- 4	-1,312
		Low	-538	-46		

-2,794 Total Men

- 43 Total Women

and social grouping considered. The trend away from Engineering is not one which can be explained by the values, sex composition, or social origins of the students, losses out-numbering gains in each type tabulated.

Table 4.9 g) concludes these materials by summarizing the comparisons with other specific fields. It is occupational values which provide the most differences, engineers being distinguished (in terms of a 10 per cent or greater percentage difference) from every other field except Physical Sciences on at least two values. Being 99 per cent male at graduation, engineers stand out as having higher percentages of men; and because their API levels are the same as the generality of students, at graduation they have lower percentages of high academic performers than Social Sciences, Humanities, Law, Physical Sciences, and Medicine. The loss of higher status students shows up in comparisons indicating substantially lower percentages of high SES students, when compared with Business, Social Sciences, Humanities, Biological Sciences, Law, and Medicine.

Conclusion

We shall not review the detailed findings of this chapter which is made up of nine self-contained vignettes summarizing the factors associated with choice of particular fields of study. It is our feeling that much has been accomplished in these analyses, but that a definite limitation must be stated. The approach has been essentially anatomical rather than physiological. That is, we have been able to establish the personal and social characteristics associated with a variety of occupational choices, but the data have not been analyzed in terms of the processes which explain the differences. It is, we believe, intuitively reasonable that teaching should attract students who want to work with people, but it is not so obvious why small town students should avoid Law, or why high SES students shy away from Science and Engineering.

TABLE 4.9--Continued

g) Characteristics Showing a 10 Per cent or Greater Difference Between Engineering and Other Fields

Characteristic	Educ.	Bus.	Soc. Sci.	Hum.	Bio. Sci.	Other Profs.	Law.	Phy. Sci.	Med.
Sex - Male	+	+	+	+	+	+		+	
A.P.I. - High			-	-			-	-	-
Values - People	-	-	-	-		-	-		-
Money	+	-	+	+	+	+	-		+
Original	+	+		-	+	+	+		+
SES - High		-	-	-	-		-		-
Hometown - Larger	+		-				-		-
Religion - Protestant . . .							+		+
Catholic									
Jewish							-		-

+ = the per cent of seniors in Engineering possessing the attribute is greater than the per cent in the comparison group by 10 per cent or more.

- = a negative difference of 10 per cent or more.

A variety of hypotheses can be advanced in order to explain these findings: a) direct occupational inheritance; b) the existence of occupational values other than those analyzed; c) differential exposure and familiarity with various occupations; d) variation in type of college; e) perceived discrimination or favoritism in regard to particular sexes or sub-cultural groups. It is planned that as this research continues considerable attention will be paid to the "physiology" as well as the morphology of occupational choices, but for the moment we have achieved essentially a description of "who" does or does not end up in a given field and roughly when their decisions took place, but we know little about the "why" questions.

CHAPTER V

PLANS FOR POSTGRADUATE STUDY: AN OVERVIEW

We are all aware that one of the greatest social changes in America has been the revolution in college attendance, whose consequences for social mobility, national intellectual level, and personal values have been the source of considerable scholarly and popular discussion. The United States Census tells us that while in 1900 19 per cent of the 18- and 19-year-olds were enrolled in school, by 1930 the figure rose to 25 per cent, after World War II there was a spurt to 32 percent, and in 1960 the figure had reached 42 per cent.

The similar explosive increase in graduate education has received less attention, and statistical documentation is actually difficult to find. It was only in 1960 that the Census felt it was necessary to distinguish between college graduation and the enrollment in postgraduate studies in its schedule and tabulations. Clearly, however, each higher level of education must increase as those below it swell, so it is hardly surprising that the number of graduate degrees awarded has risen phenomenally in this century. Prior to the early 1920's, for example, less than 1,000 Ph.D.'s were awarded per year, while the current figures are near 10,000. What is less obvious is the major finding of this research, that *acceptance of study beyond the bachelor's degree is so great that the vast bulk of June, 1961 graduates anticipated further study*. Putting it another way, our evidence will be that a *bachelor's degree recipient is more likely to anticipate postgraduate study than a high school student to anticipate college*.

Because we were concerned to pin down as accurately as possible how many and what kinds of students planned to go on to postgraduate work, several items in the questionnaire were designed to probe intentions in this area. By combining questions on plans for Fall, 1961, plans for later years, and attitudes toward further study, it was possible to develop a classification of the seniors into three major groups, with two subgroups in each. The resultant Plans Index is presented in Table 5.1.

TABLE 5.1

PLANS FOR GRADUATE OR PROFESSIONAL STUDY

Group	Per cent		Cumulative Per cent
Plan to attend graduate or professional school, Fall, 1961	32.6		
Accepted by one or more schools		20.2	20.2
Other		12.4	32.6
Plan to attend after 1961-1962	44.6		
Specific year given		29.9	62.5
No specific date in mind		14.7	77.2
Do not plan to attend	22.8		
Yes on "If there were no obstacles...would you like to attend?"		5.4	82.7
Maybe or no		17.4	100.1
Total	100.0%		

N = ... 54,236
NA on one or more items in index . . . . . 2,428 (= 4.3% of Total)
Total Weighted N = ... 56,664

The six groups and their percentages are as follows:

A. Expecting to go on next year (32.6 per cent)

  1. Planning to go on Fall, 1961 and accepted by at least one school in Spring, 1961 (20.2 per cent)
  2. Planning to go on Fall, 1961, but not yet accepted in Spring, 1961 (12.4 per cent)

B. Planning to attend later (44.6 per cent)

  3. Planning to attend in 1962-1963 or some later specific date (29.9 per cent)
  4. Planning to attend sometime in the future, but with no specific date in mind (14.7 per cent)

C. Not planning to go on ever (22.8 per cent)

  5. Not planning to attend, but answered "Yes" to "Would you like to go on if there were no obstacles?" (5.4 per cent)
  6. Not planning to attend and answered "No" or "Maybe" to question on preference (17.4 per cent)

The six groups order the students as follows: those already accepted for next year, those planning to attend in Fall, 1961 but not accepted, those with definite plans for later study, those with indefinite plans, those who would like to go on but do not expect to and, finally, those who neither expect nor prefer to go on.

In the wording of the questionnaire and in the editing of schedules[1] postgraduate study was deliberately defined quite inclusively, and the reader should bear in mind that night school study, study in technical and commercial courses, as well as full-time enrollment in arts and science or professional school are considered "postgraduate work" or "advanced study."

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[1] Although the high volume of schedules prohibited editing of the schedules prior to key punching, the entire set was subjected to an elaborate "cleaning" process in which cases with discrepant responses (e.g., students who said they were going on next year and also answered the question on reasons for not going on) were reconciled by reference to the original schedules.

The following inferences may be drawn from the distribution of cases:

1. College seniors have a favorable orientation toward postgraduate study. Assuming that those going on are all favorable, 83 per cent "favor" advanced study.
2. College seniors have high aspirations for postgraduate study. Seventy-seven per cent expect to undertake advanced study eventually.
3. Considering groups 1 through 5 in the Plans Index as positively oriented toward graduate study, very few of the positively-oriented students feel that they cannot accomplish their goal. Only seven per cent of the oriented group do not expect further study, three-quarters of the oriented group have a specific plan (at least in terms of a date) to attend.
4. Of the students oriented toward graduate study, only 24 per cent had been admitted for study in Fall, 1961; 15 per cent of the oriented group expected to attend but hadn't been admitted, 54 per cent of the oriented group planned to attend after being out of school for some period of time.
5. More than half of the students (57 per cent) fall into the ambiguous categories of expecting graduate study, but not having been admitted to a graduate school for Fall, 1961.

The two most important conclusions to be drawn from the figures appear to be these: An extraordinarily high proportion of graduating seniors anticipate postgraduate study, but in June, 1961, the majority of those anticipating study had fairly indefinite plans. Considering only anticipations, it appears that postgraduate study has well-nigh universal acceptance for 1961 college graduates, and if it is fair to say that "these days everybody plans to go to college," it is much fairer to say that "these days everybody with a bachelor's degree plans to go to graduate school," for the 77 per cent expecting further study is well above the 40 per cent of high school seniors expecting college reported by Natalie Rogoff for 1955 data.[2]

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[2] Quoted in Burton R. Clark, Educating the Expert Society, (San Francisco, Chandler Publishing Company, 1962), p. 61.

A more pessimistic conclusion, however, would follow from the assumption that those who are postponing their plans or who hadn't been accepted in June were merely wishful thinkers and that the 20 per cent who had been accepted account for the bulk of the actual graduate students produced by the class of 1961. While it would appear more "objective" to write off the "later" group, indirect evidence leads us to conclude that this would be inaccurate. It is worthwhile to note the following:

1) A recently completed NORC survey of the financial problems of arts and science graduate students[3] showed that a little more than 40 per cent of them had begun their studies after being out of undergraduate school one or more years.

2) As we shall see, in some fields, such as Education and Social Work, entry to graduate study after some period of practical experience is considered the norm rather than the exception.

3) The Bureau of the Census reports that among college graduates in 1959, 41 per cent had completed some work beyond the BA (or equivalent).[4] This percentage ranged from a low of 23 per cent among those aged 20-24 to a high of 52 per cent among those 65 and over, figures quite consistent with the assumption that many of the "middle" group on the index will eventually enter advanced studies.

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[3] James A. Davis, with the assistance of David Gottlieb, Jan Hajda, Carolyn Huson, and Joe L. Spaeth, Stipends and Spouses: The Finances of American Arts and Science Graduate Students (University of Chicago Press, 1962), p. 28.

[4] Current Population Reports, P-20, No. 99, Bureau of the Census, Washington, D.C., February, 1960.

4) Given the pattern of closing dates for application to postgraduate studies, the 12 per cent of the sample who planned to begin in Fall, 1961 but who hadn't been admitted in June, appeared unrealistic in their expectations. However, tabulations on this group in the representative subsample showed that 63 per cent of them expected to be employed full-time while going to school in contrast to nine per cent of the accepted group. Thus, those in group 2 on the index may typically be night students who had not picked a school because they had not firmed up their job situations yet.

NORC has received a grant for a follow-up study to determine the actual outcomes for these students, but at this writing the data are not available. It is undoubtedly safe to conclude that however the data turn out, the general trend of all the direct and indirect evidence is that while American college students have "great aspirations" for advanced study, the bridge from bachelor's study to postgraduate study is a long and far from straight one.

Field of Specialization

We noted in Chapter IV that postgraduate education has a vocational focus which is not so characteristic in lower levels of study. (Even though American colleges are often damned for their applied emphasis, 67 per cent of our sample checked "a basic general education and appreciation of ideas" as the most important purpose of college, while 39 per cent checked "career training," RSS). Whether the field is philology or forestry, studies beyond the bachelor's degree are organized around the training of young people for entry into particular lines of work.

From this point of view it is hardly surprising that the single most important factor in predicting a student's category on the Plans Index is his anticipated career. Very few people expect to succeed in Medicine without attending medical school, and it turns out that 89 per cent of those aspiring to be physicians ended up in the group planning to go on in 1961. At the opposite pole, it would be difficult to persuade a girl that without advanced training she will fail in the career of housewife, and it turns out that among those girls who plan to be housewives exclusively (a very small proportion of the women, by the way) one per cent anticipated going on in 1961. Most career fields lie between these extremes, and the relationship between career and postgraduate study turns out to be a little more complicated than these polar examples, but the fact remains that the findings on high expectations for advanced study begin to make a lot more sense when we realize that so many of the students are aiming for careers where advanced study is either a ticket of admission or a very useful asset.

In Table 5.2 we have assembled for comparison, data on undergraduate major, graduate study and career plans.

There are some interesting differences in the figures... Arts and Science fields decline from 38 per cent of the undergraduate majors to 30 per cent of the graduate majors to 18 per cent of the future careers... Education increases from 28 per cent of the undergraduate majors to 32 per cent of the careers... but on the whole the figures are quite similar in each column. The generalization is rough and there are some clear exceptions (e.g., you cannot study Law or Medicine as an undergraduate) but the broad tendency is for undergraduate majors, graduate fields and careers to show very similar distributions. The implication is that in terms of students' plans at graduation, the graduate student is not someone who is attracted to an esoteric field of study, rather graduate studies are spread across the same spectrum as undergraduate studies. Just as modern America has provided a rich choice of undergraduate fields for its youth, graduate plans are not limited to the old line professions or Ph.D. tracks, but spread across the heterogeneous interests and specializations of the graduates.

TABLE 5.2

DISTRIBUTION IN SAMPLE OF UNDERGRADUATE MAJOR, GRADUATE FIELD OF STUDY AND CAREER FIELD

Field	Undergraduate Major For Total Sample		Graduate Field For Those Planning Advanced Study		Career Field For Total Sample	
Arts and Science	38.5		30.1		18.0	
Physical Science		7.6		7.4		5.4
Biological Science		3.9		3.4		2.1
Social Science		10.7		7.0		4.0
Humanities & Fine Arts		16.3		12.3		6.5
Professional Fields.	45.0		56.6		59.3	
Education.		27.6		29.4		32.2
Engineering.		9.2		7.7		8.3
Law (Pre-Law).		0.3		6.1		3.9
Medicine (Pre-Med)		0.9		3.4		2.8
Social Work.		0.4		1.9		1.8
Other.		6.6		8.1		10.3
Other.	14.7		12.2		19.7	
Business and Administration.		13.3		11.4		18.2
Agriculture & Related.		1.4		0.8		1.5
Respondent Checked "No near equivalent on this list".	1.3		1.0		2.8	
Total	99.5%		99.9%		99.8%	

N = ... 55,546
NA Field 1,118
Total Weighted N . . . 56,664

N = ... 39,726
No Grad School. 12,383
NA Field. 2,127
NA Plans. 2,428
Total Weighted N. . . . 56,664

N = ... 54,172
Do Not Expect To Work . 901
NA Field. 1,591
Total Weighted N. . . . 56,664

There appears to be some contradiction here. Having begun by saying that career field is the best predictor of graduate plans, we then concluded that the distribution of graduate students is very much like the distribution of career fields. Part of the "contradiction" stems from the deceptive appearance of small percentages. Thus, the fact that physical scientists amount to 7.4 per cent of the graduate students and 5.4 of the careers, while businessmen total 11.4 per cent of the graduate students and 18.2 per cent of the careers, is really indicative of a sharp difference in Plans for scientists and businessmen. More important, however, is the difference between "next year" and "later." The figures on graduate field include both students who planned to begin in Fall, 1961 and those with more indefinite intentions to go on sometime in the future. Because close to 80 per cent plan to go on sometime and because there is continuity from undergraduate major to graduate field to career field, it would be surprising to find tremendous differences in the three sets of figures. We gain a new perspective on the relationship between careers and graduate study, however, when we treat separately the three groups: a) Expecting to go on next year (Next Year), b) Planning to attend later (Later), and c) Not Planning to Go on ever (Never).

Table 5.3 a) gives the trichotomous distribution on plans for a detailed break-down of the fields. Because the case bases are rather small for some of the detailed fields, we shall treat only the grouped data [Table 5.3 b)]. The most convenient way to analyze trichotomous data employs "triangular coordinate paper," the data in Table 5.3 b) being presented in graph form in Table 5.3 c). The graph has three axes allowing for a range from 0 to 100 per cent on Next Year, Later, and Never, and for each point one can read off the percentages which must total to 100.

TABLE 5.3

ANTICIPATED LONG RUN CAREER FIELD AND PLANS INDEX

a) Ungrouped Fields

Code	Field	Next Year	Later	Never	Total	
					Per cent	N
21	Medicine	89	11	0	100	1,484
30	Anatomy	86	14	0	100	14
20	Dentistry	79	20	1	100	270
40	Physiology	78	16	6	100	51
01	Astronomy	77	23	0	100	30
93	Law	76	23	1	100	2,010
34	Biophysics	75	25	0	100	24
33	Botany	73	18	9	100	33
89	Theology, Religion	72	22	6	100	60*
36	Genetics	71	29	0	100	41
03	Physics	69	28	2	99	643
70	Clinical Psychology	68	26	5	99	19*
82, 84	Foreign Languages	66	16	19	101	32*
41	Zoology	63	24	13	100	105
07	Metallurgy	63	33	4	100	24
06	Oceanography	62	31	7	100	29
3X	Biology, Other	61	28	11	100	100
81	English	58	28	14	100	36*
83	History	58	34	8	100	38*
75,76,79,7X	Social Science	58	36	6	100	36*
05	Geology	57	30	13	100	98
39	Pharmacology	57	39	4	100	23
66, 67	Educational Psychology	57	37	6	100	30*
78	Political Science	55	30	15	100	40*
32	Biochemistry	54	41	5	100	152
88	Library	53	27	20	100	15*
94	Foreign Service	52	38	10	100	21*
02	Chemistry	51	37	12	100	960
12	Chemical Engineering	50	17	33	100	18*
52, 53	Secondary Languages	44	41	15	100	27*
37	Microbiology	44	37	19	100	144
09	Mathematics	42	41	17	100	825
13	Electrical Engineering	40	50	10	100	89*
35	Entomology	40	50	10	100	48
04	Geography	40	49	11	100	110
68	Ed. Administration	39	59	3	101	38*
55	Secondary Science	38	55	8	101	40*
08	Meteorology	38	48	14	100	42
0X	Physical Science, Other	37	48	15	100	46

* = N based on representative sub-sample.

TABLE 5.3 a)--Continued

Code	Field	Next Year	Later	Never	Total	
					Per cent	N
80	Fine Arts	37	43	20	100	92*
60	Ed. of Exceptional Children	36	59	5	100	22*
31	Biology	35	39	26	100	327
1X	Engineering, General	34	44	22	100	32*
54	Secondary History, Soc. Studies	33	57	10	100	79*
93	Public Administration . . .	32	50	18	100	22*
23,25,26,28,2X	Other Health	30	40	30	100	40*
61,62,63,64,65	Vocational Education . . .	28	50	22	100	108*
96	Social Work	27	53	20	100	49*
51	Secondary English	27	59	14	100	90*
10,14,15,17,18	Engineering, Other	27	48	25	100	48*
97	Secretarial	25	25	50	100	28*
72	Industrial Psychology . . .	24	48	28	100	21*
71,73,74	Psychology, Other	23	46	31	100	13*
56	Secondary Mathematics . . .	23	70	7	100	43*
11	Civil Engineering	22	38	40	100	45*
86	Architecture, City Planning	22	35	43	100	23*
27, 45,46,47	Agriculture	22	29	49	100	753
98	Home Economics	20	52	28	100	25*
57	Physical Education	19	75	6	100	72*
50	Elementary Education . . .	17	67	16	100	278*
91	Business	17	41	42	100	353*
58,59	Art-Music Education	15	72	13	100	60*
5X	Hwfe. Teachers	14	46	40	100	87*
16	Mechanical Engineering . .	14	59	27	100	37*
87	Journalism	14	42	44	100	43*
38	Pathology	14	43	43	100	7
92	Accounting	13	47	40	100	102*
6X	Education, Other	10	75	15	100	20*
22	Nursing	9	45	46	100	56*
90	Advertising	7	51	42	100	43*
24	Pharmacy	5	32	63	100	19*
9X	Military	5	70	25	100	20*
99	Housewife	1	26	73	100	811

TABLE 5.3--Continued

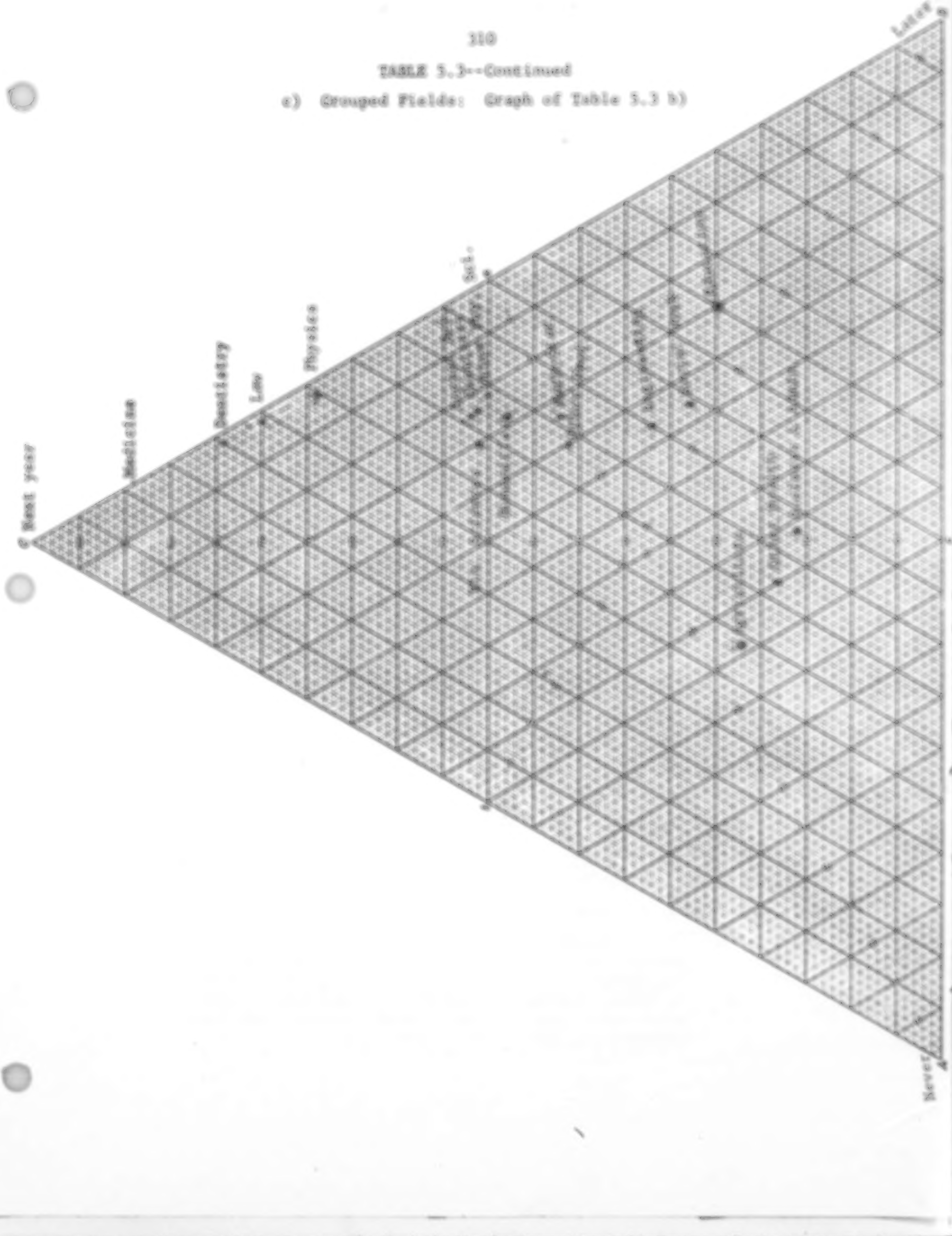
b) Grouped Fields (TWE)

Career Field	Plans			Total	
	Next Year	Later	Never	Per cent	N
Medicine	89	11	0	100	1,484
Dentistry	79	20	1	100	270
Law.	76	23	1	100	2,010
Physics.	69	28	2	99	643
Social Sciences.	52	36	12	100	2,084
Chemistry.	51	37	12	100	960
Biological Sciences.	51	34	15	100	1,091
Other Physical Sciences. . . .	50	39	11	100	379
Humanities	48	38	14	100	3,382
Mathematics-Statistics	42	41	17	100	825
Other Professions.	41	39	20	100	3,253
Engineering.	32	45	23	100	4,393
Social Work.	28	49	23	100	961
Education.	25	60	15	100	16,683
Business and Administration. .	16	43	41	100	9,545
Other Health Professions . . .	18	37	45	100	1,837
Agriculture and Related. . . .	22	29	49	100	753

N = ...	50,553
NA Plans.	2,098
Respondent circled "Job which has no near equivalent on this list". .	1,521
Do not expect to work after graduation.	901
NA on future career	1,591
Total Weighted N = ...	56,664

TABLE 5.3--Continued

c) Grouped Fields: Graph of Table 5.3 b)



When the distribution of career fields on the graph is examined, the career fields seem to fall into four clusters in terms of the pattern of the plans for advanced study:

1) Medicine, Dentistry, and Law...heavily concentrated toward the Next Year pole and with virtually no students in Never.
2) The Arts and Science fields (Physics, Social Sciences, Chemistry, Physical Sciences Other, Mathematics, Biological Sciences, Humanities) and the "Other Professions" being low on Never, but tending to have only slight majorities going on next year.
3) Engineering, Social Work and Education....low on per cent Never like the fields in group two, but with more students going Later than going Next Year.
4) Business and Administration, Agricultural fields, and Health Professions other than Medicine.... very low on Next Year, and relatively high on Never.

Our general finding, that acceptance of advanced training beyond the bachelor's degree is almost universal in the class of 1961 is supported by this analysis too. There is no field in the table in which a majority of students fall into the Never group, even for the Agricultural fields 51 per cent anticipating some advanced study. (Among housewives 73 per cent do fall in Never as is seen in Table 5.3 a) but the data in Table 5.3 c) are limited to fields of employment). Except for Business and Administration, Other Health Professions, and Agriculture, more than 75 per cent of the students in every other field anticipate eventual graduate work. However, the variation between Next Year and Later is considerable; the four groups delineated above may be interpreted as follows:

> Group 1) may be characterized as the "licensed" professions for which advanced study is prerequisite for employment. Because students aspiring to careers in fields such as Law and Medicine are barred from entry until they receive graduate degrees, they have overwhelming majorities in Next Year.

> Group 2) may be characterized as the "Arts and Science" fields in which advanced degrees are an eventual necessity, but which do allow low level employment with a bachelor's degree. The students in these fields almost all plan some graduate work, but about half plan to postpone their studies.
>
> Group 3) may be characterized as the fields in which advanced study is very desirable for promotion and upgrading after entry into the field, but for which there is little resistance to employment of B.A.'s. Thus, students in Education expect that after they have worked a while, a Master's degree will be very useful, but they see it coming after a year or so of practical experience.
>
> Group 4) may be characterized as fields in which graduate training is optional. Thus, about half of the students aiming for careers in Business and Administration do plan advanced study, but entry into the field and promotions are not barred to the student who stops at the bachelor's.

It appears that for some fields advanced study is an immediate necessity, in some it is an eventual necessity, and in some it is a luxury, even though there is general acceptance of its desirability.

The interesting group appear to be the Arts and Science choosers. While the fact that the majority of students in Education intend to postpone their studies until they have had some practical experience, "makes sense," the fact that only about half of the students in Arts and Science career fields plan to go Next Year does not appear so "natural." As noted above, both this research and NORC's previous survey of Arts and Science graduate students are suggestive of a major problem in the recruitment of Arts and Science personnel, the slow rate at which these people tend to begin and complete their advanced training.

We have now documented the fact that while there is some variation in the per cent "Never" by future career field, the big difference is that, despite the wide endorsement of advanced training, the career structure of different occupations appears to vary so that the timing of graduate study fluctuates considerably for students aiming for different lines of work. The description of the relationship between career field and graduate field can be completed by examining the match between the two. Table 5.4 gives the per cent of students planning graduate study in a given field whose future career field is identical.

The correlation between career field and graduate field is naturally very high, but there is some variation. Among students planning advanced study in Chemistry, for example, 91 per cent give it as their career field. However, for those planning graduate work in History, less than half (41 per cent) named History as their long-run career field. Why? Because 42 per cent of those planning studies in History anticipated long-run careers in primary and secondary education. Here, as in Chapters III and IV, the field of Education continues its winning ways. Listed below from Table 5.4 are all the graduate fields where more than 10 per cent of the students expected careers in Education.

Graduate Field	Per cent Expecting Career in Education
History	42
Biology	40
English	31
Humanities, Other	30
Languages	30
Social Sciences, Other	27
Zoology	26
Fine Arts	24
Botany	21
Sociology	21
Geology, Geography	19
Mathematics	15
Philosophy	13
Physical Sciences, Other	13
Psychology, Other than Clinical .	12

Other discrepancies between graduate field and career field are less striking, but the following are all the examples

TABLE 5.4

GRADUATE MAJOR AND FUTURE CAREER FIELD

(Per cent in Given Future Career Field When the Career Field Is Not Identical[a] to Their Graduate Major)

Graduate Major	Per cent with Identical Future Career Field	Nat. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Eng.	Med.	Edu.	Bus.	Law	Soc. Work	Other Health	Other Profs.	Total	
														Per-cent	N
Chemistry	91	1	0	0	0	0	0	5	0	0	0	0	2	99	861
Physics	81	3	1	0	0	6	0	4	1	0	0	1	4	101	721
Geology & Geography .	65	1	0	3	2	1	0	19	1	0	0	0	8	100	271
Mathematics	68	3	0	0	0	6	1	15	4	0	0	0	4	101	898
Other Physical Sci. .	65	2	1	0	0	12	1	13	1	1	0	0	4	100	156
Engineering	85	1	0	0	0	8	0	0	3	0	0	0	3	100	3,041
Medicine	97	0	0	0	0	0	0	1	0	0	0	1	1	100	1,431
Nursing	98	0	0	0	0	0	0	1	0	0	0	0	0	99	400
Other Health	88	0	0	1	0	0	0	4	0	0	0	4	2	99	663
Biology	46	0	6	0	2	0	4	40	1	0	0	1	1	101	360
Biochemistry	71	9	2	0	0	0	4	1	0	0	0	13	2	102	182
Botany	48	1	21	0	0	0	0	21	0	0	0	0	9	100	103
Microbiology	79	0	3	0	0	0	2	2	0	0	0	11	2	99	131
Other Biology	62	0	9	0	0	2	1	10	0	0	0	7	8	99	287
Physiology	46	0	21	0	0	0	16	7	0	0	0	10	0	100	96
Zoology	48	1	14	0	0	0	3	26	0	0	0	1	8	101	157
Other Professions . .	80	0	0	1	1	1	0	9	2	0	0	1	4	99	2,988
Clinical Psychology .	84	0	0	1	0	0	1	10	2	0	1	0	2	101	366
Other Psychology . .	61	1	0	5	0	1	0	12	13	1	0	1	4	99	281
Economics	52	0	0	2	1	2	0	5	25	2	0	0	10	99	455
Political Science . .	53	1	0	1	1	0	0	10	6	1	0	0	28	101	676
Sociology	49	0	0	1	0	0	0	21	7	0	12	0	9	99	362

[a] In some cases (e.g., Education) it is possible to find that people "changed" from a given Graduate Major to the identical category on Future Career Field. This seeming inconsistency is explained by the fact that those categories frequently include sub-categorizations (e.g., 25 per cent of those with Graduate Majors in one educational field actually expect to teach in another).

TABLE 5.4--Continued

Graduate Major	Per cent with Identical Future Career Fields	Nat. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Eng.	Med.	Edu.	Bus.	Law	Soc. Work	Other Health	Other Profs.	Total	
														Per Cent	N
Other Social Sciences .	41	1	0	8	11	0	0	27	2	0	0	1	8	99	270
Fine Arts	62	1	0	0	3	1	0	24	3	0	0	0	5	99	1,407
English	55	0	0	0	2	0	0	31	4	0	0	0	7	99	1,172
Languages	48	1	0	1	3	0	0	30	4	1	0	1	10	99	700
History	41	0	0	2	1	0	0	42	3	1	1	0	10	101	1,121
Philosophy.	62	1	0	1	3	0	0	13	4	0	0	0	16	100	193
Humanities, Other . . .	28	0	0	1	14	2	0	30	6	1	0	9	11	102	176
Education	68	0	0	0	1	0	0	25	1	0	0	1	3	99	11,469
Business.	74	0	0	0	0	6	0	2	10	0	0	0	7	99	4,526
Law	79	0	0	2	0	1	0	1	11	0	0	0	6	100	2,434
Social Work	86	0	0	0	0	0	0	9	2	0	0	0	1	98	705

N = ...	39,059
NA Future Career Field or Unclassifiable.	667
NA Graduate Field only.	1,622
NA both Future Career Field and Graduate Major. .	505
Total	41,853
Excluded:	
(a) Not Planning Grad. School Ever.	12,383
(b) NA Plans Index.	2,428
Total Weighted N = ...	56,664

from Table 5.4 where more than 10 per cent of the students expecting graduate study in a given field expect careers in a particular different field.

Graduate Field	Career Field	Per cent
Political Science	Other Professions	28
Economics	Business	25
Botany	Bio. Sci. Other than Botany . .	21
Physiology	Bio. Sci. Other than Physiology	21
Physiology	Medicine	16
Philosophy	Other Professions	16
Zoology	Bio. Sci. Other than Zoology .	14
Humanities, Other	Different Humanities Field . .	14
Biochemistry	Health, Other	13
Psychology, Other than Clinical	Business	13
Physical Science, Other . . .	Engineering	12
Sociology	Social Work	12
Microbiology	Health, Other	11
Social Sciences, Other . . .	Humanities	11
Humanities, Other	Other Professions	11
Law	Business	11

The pattern seems clear. It is the Arts and Science fields other than Physical Sciences which have the greatest number of instances of a "mis-match." In particular the Humanities and Biological Sciences stand out as fields where the general advanced training can be put to use in applied fields outside of the field itself.

Even though the percentages are small, in some instances they are cumulative. Thus, in the following fields less than half of the students anticipate careers in that field.

Graduate Field	Per cent with Identical Future Career
Humanities, Other	28
History	41
Social Sciences, Other . .	41
Biology	46
Physiology	46
Languages	48
Botany	48
Zoology	48
Sociology	49

Because in the vast majority of fields the matches are quite high and the cases where discrepancies are common merely show an indirect rather than direct vocational tie (e.g., the high proportion of Political Science students aiming for "Other Professions" presumably are people looking for academic training for government service) the data in Table 5.4, as in the association between plans and career field, serve to show that the relationships are often complex, not to undermine our contention that career choice is the major factor in plans for advanced study.

Conclusions

In this introduction to the analysis of the 1961 seniors' plans for postgraduate studies we have examined the distribution of the sample on the Plans Index, the distribution of fields of anticipated graduate study, and the relationships between career plans and plans for advanced study.

The major conclusions may be summarized as follows:

1) Although the graduating seniors have a strikingly high orientation toward further study, 83 per cent being favorable toward it and 77 per cent expecting to go on themselves, only 20 per cent had been accepted for graduate study in Fall, 1961 at the time of their graduation in June, 1961; 57 per cent of the sample having less definite or immediate plans for advanced study.

2) Indirect evidence suggests that the high proportion "Later" is not merely due to wishful thinking, but that delay in entry to postgraduate studies is characteristic of American higher education.

3) While there is hardly a field of study in which expectations of advanced study are not surprisingly high, fields vary considerably in their distribution into the "Next Year," "Later," and "Never" categories, the suggestion being not that some fields are high in interest and others low; rather that for some fields graduate study serves as a ticket of admission, for others it serves as an eventual necessity, and for some it is a desirable luxury.

CHAPTER VI

WHO PLANS TO GO TO GRADUATE SCHOOL?

While Chapter V revealed the great aspirations of the June, 1961 graduates, it also documented the fact that only a minority intended to realize their educational plans immediately after graduation. Even though differences in career field helped to explain much of the variation in plans, within each field there is considerable variation in intentions for advanced study. It is the aim of this chapter to discover the factors which account for differences in plans among students within a career field.

Unexplained variation is, of course, an intellectual problem which always challenges the research worker, but we should not lose sight of the fact that the problem has considerable practical importance. Granted that engineers and business administrators can be quite effective without advanced degrees or that school teachers may actually benefit from having practical experience before they begin their master's degree work; for the major professions and the Arts and Science fields, the advantages of immediate and extensive graduate training are overwhelming. Without graduate training, entry into the major professions is barred and work in Arts and Science fields can only be at a low level.

Even postponement of advanced training takes a toll. From the viewpoint of the student, the older he is when he begins graduate study, the fewer working years he will have as a thoroughly trained professional and the greater the chance that he will have a family to support during his studies.[1] When one considers that in most Arts and Science fields (Physics and Chemistry constitute conspicuous exceptions) the median age at granting the Ph.D. is over 30,[2] these considerations begin to take on additional significance. Assuming the granting of the

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[1] Cf. James A. Davis, with the assistance of David Gottlieb, Jan Hajda, Carolyn Huson, and Joe L. Spaeth, Stipends and Spouses (Chicago: University of Chicago Press, 1962).

[2] Ibid., p. 29.

Ph.D. at age 30 and retirement at age 65, each year of postponed graduate study subtracts three per cent from the working life of the Ph.D., and any reform which would enable the great bulk of future Ph.D.'s to begin their studies immediately would probably add several percentages to the supply of man years of Ph.D.'s available to the nation.

Not all of this "waste" is modifiable. At the same time, Appendix II (National Projections on Graduate School Attendance) estimates that about 1,000 June graduates from the top fifth in API are postponing studies in Physical Sciences, as are about 4,000 high API students in Humanities and Social Sciences.

We shall want to examine the factors involved most carefully, beginning with the reasons reported by the students themselves and then considering objective measures associated with delay or abandonment of plans for advanced study.

The Subjective Reasons

In examining the reasons why students, otherwise qualified, do not intend to begin graduate study immediately, it is useful to keep separate two broad classes of reasons. On the one hand there are the motivations of the students--the degree to which they really want to go on to school. Even though the writer is fully persuaded of the advantages of immediate advanced study, there is no necessity for students to share these ideas. To the extent that there are other things they would rather do, to the extent that they see plentiful opportunities which do not require the time, money, and work of immediate training, and the extent to which they believe that practical experience should come first, we can say that they are low on motivation to continue.

External obstacles constitute a second and strategically important class of factors. The student whose finances prohibit further study, the young man facing obligatory military service, and the student whose undergraduate record is of low quality face formidable obstacles to further study regardless of their motivations. In particular, financial obstacles deserve special attention. Certainly anyone has the right to decide against advanced study of his own free will, but to the extent that qualified students are prevented from going on because of financial problems, we can say that a clear-cut social problem exists. Furthermore, the solution to the problem of finances is obvious in comparison with the difficult task of affecting the motivations of the college graduates.

We shall begin, then, by attempting to sort the motivational factors from the external obstacles, paying particular attention to financial barriers.

Although it is commonly believed that survey analysis is particularly adept at analyzing "reasons," actually such data are among the most difficult to treat scientifically. NORC's experience in this and other surveys is that respondents almost unanimously try to "tell the truth" as they see it, but the human being's capacity for rationalization is almost endless. We shall see that only two per cent of the graduating students do not think they have the ability to go on for graduate work, a statistic which is a pretty poor objective measure of ability, but which _is_ an important finding about how the students view the situation.

All students who did not fall into the "Next Year" group in the Plans Index were asked two questions about their reasons. One was simply a list of 12 possible reasons ("I want to get practical experience first," "Family responsibilities," etc.) and the students were asked "Which of the following best explains why you do not anticipate going to graduate or professional school next year? (Circle any which apply.)"

Table 6.1 gives the percentages for the total sample and among those not going on for each of the twelve reasons. "I want

TABLE 6.1

DISTRIBUTION ON REASONS FOR NOT ATTENDING GRADUATE OR PROFESSIONAL SCHOOL NEXT YEAR

Specific Reasons

(Per cent circling item as answer to "Which of the following best explains why you do not anticipate going to graduate or professional school next year?"

Response	Per cent of . . . *	
	Total Sample	Those Not Going
I want to get practical experience first	22	33
Financial obstacles	20	30
I'm tired of being a student	18	27
Can get a desirable job without further schooling.	16	23
No desire to do so	15	22
Family responsibilities . .	12	19
I would rather get married .	8	12
Military service	7	11
Low grades in college . . .	7	10
I will be in a company training program which provides the equivalent . . .	2	4
I don't think I have the ability	2	4
I lack the necessary undergraduate course prerequisites	1	2
N = ...	53,665	36,010
NA, Reasons Not Going On .	571	571
Plan to Attend School Next Year	-	17,655
NA on Plans	2,428	2,428
Total Weighted N = ...	56,664	56,664

*Percentages total more than 100 because of multiple answers.

to get practical experience first" is the most common, checked by 22 per cent of the total sample and 33 per cent of those not going on. Next in order come "Financial obstacles," "I'm tired of being a student," "Can get a desirable job without further schooling," and "No desire to do so." At the opposite end, "I lack the necessary undergraduate course prerequisites," "I don't think I have the ability," and "Low grades in college" were each checked by less than 10 per cent of the total sample.

It appears that motivation and the external obstacle of finances appear frequently, and from the students' point of view the obstacle of academic barriers is a very rare one.

Later evidence will show that whether they realize it or not, the students with lower academic performance are much less likely to go on, but the low figures for academic obstacles as reasons are interesting. They suggest that the graduating seniors do not define advanced study as the prerogative of the "Phi Bete," but apparently assume that a bachelor's degree is sufficient qualification for advanced study, which may appear to them as a continuation rather than a "step up" academically.

The list tells us a little more when we examine the interrelations of the items (Table 6.2), the Q coefficients telling whether students who circled a given reason were disproportionately likely or unlikely to circle another particular reason. Considering the nine items circled by 10 per cent or more of those not going on, the groupings appear to be as follows:

A) Motivational

1) "I'm tired of being a student," "No desire to do so," "Can get a desirable job without further schooling," and "I would rather get married," all have positive Q interrelations of .21 or more and generally negative relations with other items.

2) "I want to get practical experience first" tends to be independent of or negatively related to all the other items.

TABLE 6.2

INTERCORRELATIONS OF REASONS FOR NOT GOING TO GRADUATE OR PROFESSIONAL SCHOOL NEXT YEAR

(Representative Sub-sample)

(Q Values)

Values	Tired	No Desire	Good Job	Prefer Marriage	Military	Experience	Grades	Family	Money
Tired . . .		.50	.34	.24	-.23	.17	.10	-.24	-.11
No desire .	.50		.50	.21	-.36	-.37	-.02	-.27	-.57
Good job .	.34	.50		.27	-.60	-.05	-.16	-.04	-.18
Prefer marriage . .	.24	.21	.27		-.38	-.02	-.14	-.60	-.20
Military .	-.23	-.36	-.60	-.38		-.42	.01	-.53	-.15
Experience.	.17	-.37	-.05	-.02	-.42		-.31	-.55	-.12
Grades . .	.10	-.02	-.16	-.14	.01	-.31		-.07	.11
Family . .	-.24	-.27	-.04	-.60	-.53	-.55	-.07		.29
Money . . .	-.11	-.57	-.18	-.20	-.15	-.12	.11	.29	

Notes:

1) Item wordings are as follows:

Tired = "I'm tired of being a student"
No Desire = "No desire to do so"
Good Job = "Can get a desirable job without further schooling"
Prefer Marriage = "I would rather get married"
Military = "Military Service"
Experience = "I want to get practical experience first
Grades = "Low grades in college"
Family = "Family responsibilities"
Money = "Financial obstacles"

2) The following items in the schedule, circled by 10 per cent or less of those not going on next year were excluded from this table:

"I don't think I have the ability"
"I lack the necessary undergraduate course prerequisites"
"I will be in a company training program which provides the equivalent"

B) External Obstacles

3) "Family responsibilities" and "Financial obstacles" are associated with each other (Q = .29) and have generally negative associations with the other items.

4) "Low grades in college" is essentially independent of all other reasons, except for a negative association (Q = -.31) with "I want to get practical experience first."

5) Military service is negatively related to all the other items except that it is independent of low grades.

It appears that there are two components to the motivational factors. The first (Cluster 1) appears to be a simple lack of interest in attending. The second, "I want to get practical experience first," is rather different. It is unrelated to the "Interest" cluster and has a strong negative relationship with low grades. This is presumably the motive of the "Later" group in the Plans Index who are definitely interested in advanced study and feel qualified, but prefer to postpone study until they have worked a while.

Within the external obstacle group, reasonably enough, family responsibilities and financial obstacles go together, and military service and grades are quite separate of finances and of each other. By considering a positive answer to any one of the Low Interest reasons as positive for the general type, we can array the two types of motivation, financial obstacles, and military service, as follows (data recomputed from Table 6.3).

a) Per cent of Total Sample (RSS)

Low Interest	Practical Experience	Financial Obstacles		Total
		No	Yes	
+	-	17	7	24
+	+	7	4	11
-	+	9	3	12
Total Motivational		33	14	47
-	- Military Yes	4	14	22
	No	4		
Total		41	28	69%

b) Per cent Among Students Not Going On Next Year

Low Interest	Practical Experience	Financial Obstacles No	Financial Obstacles Yes	Total
+	-	26	11	37
+	+	10	6	16
-	+	12	5	17
Total Motivational		48	22	70
-	- Military	Yes 5 No 5	21	31
Total		58	43	101%

We may draw the following inferences, remembering that these are reported reasons, not necessarily "real ones."

> 1) Motivational reasons are quite common. Forty-seven per cent of the total sample and 70 per cent of those not going on report one or more items from the motivational group.
>
> 2) Low interest is more common than practical experience. Thirty-five per cent of the total sample and 53 per cent of the group not going on in 1962 indicate one or more items from the low interest cluster. At the same time, it should be noted that the majority of students in the sample and 48 per cent of those not going on immediately did not circle any of the items in this cluster, and hence the majority may be considered "interested."
>
> 3) Four per cent of the total sample and five per cent of those not going on indicated "Military service" and did not check a motivational or financial reason. Thus, only a small number report military service as the "single" obstacle.
>
> 4) Although 28 per cent of the total sample and 43 per cent of those not going on reported financial obstacles, only 14 per cent of the total and 21 per cent of those not going on reported financial obstacles and no motivational reasons. Half of those reporting financial obstacles also reported a motivational reason for not going on immediately.

To summarize this summary, the students may be seen as falling into four groups: 1) One-third of the total and about half (48 per cent) of those not going on report only motivational reasons; 2) 14 per cent of the total and 22 per cent of those not going on reported

TABLE 6.3

INDEX OF REASONS FOR NOT GOING TO GRADUATE OR PROFESSIONAL SCHOOL NEXT YEAR

Reasons Index				Per cent of Sub-sample	Per cent of Those Not Going Next Year
Expect to go on next year				32	-
Do Not Expect to Go On*					
Low Interest	Money	Practical Experience	Military		
+	+	+	+ or -	4	6
+	+	-	+ or -	7	11
+	-	+	+ or -	7	10
+	-	-	+ or -	17	26
-	+	+	+ or -	3	5
-	+	-	+ or -	14	21
-	-	+	+ or -	9	12
-	-	-	+	4	5
-	-	-	-	4	5
		Total per cent		101	101
		N = ...		3,221	
		NA on Plans Only		85	
		NA on Reasons Only . . .		33	
		NA on Both		58	
		Total N = ...		3,397	

*Low Interest: + = positive response to one or more among Tired, No desire, Good job, Prefer marriage;

Money: + = "Financial obstacles."

Practical Experience: + = "I want to get practical experience first."

Military Service is considered only for those not giving a response to any of the three other items in the index, and is to be interpreted as "military service only."

a motivational reason and financial obstacles; 3) 14 per cent of the total group and 21 per cent of those not going on next year reported a financial obstacle, but no motivational hesitations; 4) eight per cent of the total group and 10 per cent of the students not going on in 1962 reported neither motivational nor financial obstacles. Within this last group, half (four per cent of the total sample) cited military service as their reason.

As the students view it, those who are not going on generally have a motivational reason and only a minority see themselves as motivated for immediate study but blocked by external obstacles. However, 14 per cent of the total and one out of five among those not going on cited the external obstacle of finances although they appear motivated. This figure is not far from the percentages arrived at in a direct question, "To what extent did immediate financial obstacles (not doubts about the long run economic value of further study) affect your decision regarding graduate or professional school next year?" (Table 6.4) Here 12 per cent of the total sample and 18 per cent of those not going on in 1962 circled, "Financial obstacles are the major reason I am not going on for further study next year." Thirty-one per cent of the total group and 47 per cent of those not going on circled "Financial obstacles had nothing to do with it," and the remainder (24 per cent of the total, 35 per cent of those not going on) indicated that "Financial obstacles played some part in my decision."

So far we have been treating the situation as a unilateral decision by the student. Actually, two parties are involved, for decisions on the part of graduate and professional schools are necessary. It is necessary to consider the subjective data in combination with data on application status before the picture is complete. Table 6.5 a) arranges the students according to how far they have proceeded along the following steps: application to a school, acceptance by a school, application for a stipend, and offer of a stipend. The index forces somewhat greater

TABLE 6.4

FINANCIAL OBSTACLES AS REASON FOR NOT ATTENDING GRADUATE OR PROFESSIONAL SCHOOL NEXT YEAR

Percentage Distribution of Answers to... "To what extent did immediate Financial Obstacles (not doubts about the long run economic value of further study) affect your decision regarding graduate or professional school next year?"

Response	Per Cent of . . .	
	Total Sample	Those Not Going
Financial obstacles had nothing to do with it	31	47
Financial obstalces played some part in my decision	24	35
Financial obstacles are the major reason I am not going on for further study next year	12	18
Total	67	100
N = ...	54,075	36,420
NA	161	161
Plan to Attend School Next Year .	-	17,655
NA on Plans	2,428	2,428
Total Weighted N = ...	56,664	56,664

TABLE 6.5

APPLICATION STATUS AND FINANCIAL OBSTACLES, CONTROLLING FOR SEX AND ACADEMIC PERFORMANCE

(Representative Sub-sample)

a Application Status

Stage	Applied to a School	Accepted by a School	Applied for Stipend	Offered a Stipend	Per cent of . . .	
					Sample	Previous Row
I	Yes				25	-
II	Yes	Yes			21*	84*
III	Yes	Yes	Yes		12	58
IV	Yes	Yes	Yes	Yes	9	73

N = ... 3,315
NA on Applications . . 82
Total N = ... 3,397

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*The "21" and the "84," for example, are to be interpreted as follows: "21 per cent of the sample applied to a graduate or professional school for study next year and were accepted by one or more schools"; "84" per cent of those who applied were accepted by one or more schools."

TABLE 6.5--Continued

b) Financial Obstacles and Application Status, Controlling for Sex and Academic Performance

Sex	Academic Performance	Outcome[a]	Stage on Application Index				
			Didn't Apply to School	Not Accepted by School	Stipend Refused	Didn't Apply for Stipend	Stipend Offered
Male	High	Next	18	71	73	94	96
		No, $	47	23	21	3	4
		No, Other	36	5	5	4	1
	Total		101%	99%	99%	101%	101%
	N = ...		(491)	(39)	(56)	(154)	(190)
	Low	Next	13	42	80	85	100
		No, $	50	37	20	8	0
		No, Other	37	21	0	7	0
	Total		100%	100%	100%	100%	100%
	N = ...		(799)	(43)	(15)	(71)	(27)
Female	High	Next	15	58	72	97	99
		No, $	38	38	16	0	1
		No, Other	47	4	12	3	0
	Total		100%	100%	100%	100%	100%
	N = ...		(646)	(24)	(32)	(39)	(69)
	Low	Next	9	50	-	81	-
		No, $	42	14	-	14	-
		No, Other	49	36	-	5	-
	Total		100%	100%	-	100%	-
	N = ...		(440)	(14)	(2)	(21)	(2)

N = ... 3,174
NA on Application 31
NA on API 49
NA on Plans 143

Total N = ... 3,397

---

[a] Next = Those who plan to go on to graduate or professional school;

No, $ = Those who do not plan to go on next fall and who indicated that financial obstacles played some part or are the major reason;

No, Other = Those who do not plan to go on next fall and who indicated that financial obstacles "had nothing to do with it."

TABLE 6.5--Continued

c) Data in Table 6.5 b) Percentaged Across the Rows

Sex	Academic Performance	Outcome	Stage on Application Index					Total	
			Didn't Apply to School	Not Accepted	Didn't Apply for Aid	Stipend Refused	Stipend Offered	Per cent	N
Male	High	Next	18	6	30	9	38	101	481
		No, $	88	3	2	5	3	101	261
		No, Other	94	1	3	2	*	100	188
	Low	Next	46	8	28	6	12	100	218
		No, $	94	4	1	1	0	100	423
		No, Other	96	3	1	0	0	100	314
Female	High	Next	41	6	16	10	28	101	242
		No, $	94	3	0	2	*	99	258
		No, Other	98	*	*	1	0	99	310
	Low	Next	59	10	25	3	3	100	68
		No, $	97	1	2	0	0	100	189
		No, Other	97	2	*	0	0	99	222

N = ... 3,174

NA on Application 31

NA on API 49

NA on Plans 143

Total N = ... 3,397

---

*Less than one-half of one per cent.

TABLE 6.5--Continued

d) Financial Obstacles and Application Status, Controlling for Sex and Academic Performance

A.P.I.	Sex	Outcome	Stage on Application Index			N
			Applied to a School	Applied and Accepted	Applied, Accepted, and Applied for a Stipend	
High	Male	Next	82%	76%	47%	481
		No, $	12	9	8	261
		No, Other	6	5	2	188
	Female	Next	59	53	38	242
		No, $	6	3	2	258
		No, Other	2	1	1	310
Low	Male	Next	54	46	18	218
		No, $	6	2	1	423
		No, Other	4	1	0	314
	Female	Next	41	31	6	68
		No, $	3	2	0	189
		No, Other	3	1	0	222

N = ...	3,174
NA on Application	31
NA on API	49
NA on Plans	143
Total N = ...	3,397

TABLE 6.5--Continued

e) Outcome for Students Who Applied to a School, Were Accepted, and Applied for a Stipend, by Outcome of Stipend Application (RSS)

A.P.I.	Sex	Stipend Offer	Student Status			Total	
			Next Year	No, $	No, Other	Per cent	N
High	Male	Yes	96	4	1	101	190
		No	73	21	5	99	56
	Female	Yes	99	1	0	100	69
		No	72	16	12	100	32
Low	Male	Yes	100	0	0	100	27
		No	80	20	0	100	15
	Female	Yes	-	-	-	-	2
		No	-	-	-	-	2

N =	393
Excluded:	
Didn't apply to school	2,376
Not accepted by school	120
Didn't apply for stipend	285
NA, Application	31
NA, API	49
NA, Plans	143
Total N =	3,397

consistency onto the process than really exists (Woodrow Wilson Fellows, for example, apply for a stipend without applying to a school; some students may have received informal word that they would be accepted for graduate school without making formal applications, etc.), but the index does approximate the main channels of the decision process.

Table 6.5 a) tells us how far the June graduates as a whole had proceeded along the road by graduation time. One-quarter had applied to a school; 84 per cent of the applicants had been accepted by one or more schools (of the remainder, many had applications pending and should not be considered as turned down by all the schools to which they applied); 58 per cent of those accepted had applied for a stipend; and 73 per cent of the stipend applicants reported some offer of financial aid. These figures suggest that the decision not to apply at all is a greater screening factor than refusals of applications or stipends. Although the vast majority of applicants to schools are accepted and the great majority of stipend applicants receive some financial offer, only a small proportion of students apply for either.

We can see the effect of stipends on financial obstacles by considering the application status of various types of students. In Table 6.5 c) we see the application status for three types of students: a) those expecting to go on for advanced study next year; b) those in the "Later" and "Never" categories who indicated that financial obstacles "played some part" or were "the major reason"; c) those in "Later" and "Never" who said "Financial obstacles had nothing to do with it."

In Table 6.5 d) we have the data from 6.5 b) repercentaged. Here the trend is very clear. Those students who are not planning to go on for study immediately are very seldom people who have run into barriers in the application process. Regardless of sex and API, almost 90 per cent of those not going on immediately had not even applied to a school. This is true, whether or not they cite financial reasons as an obstacle.

Data from Table 6.5 b), as rearranged in Table 6.5 e), tell us, nevertheless, that for the minority of students who do proceed far enough on the application route to be affected, stipend offerings make a difference.

Viewed this way, stipend offerings appear to make a big difference. Regardless of sex or API, the student who was refused financial aid is considerably less likely to anticipate immediate graduate work. Among high API males 96 per cent of those with an award expect to go on next year, in contrast to 73 per cent of those who were refused. Putting it another way, students who received a stipend offer very seldom fall in the "No, $" group, while about one-fifth of those who have been denied are not going on immediately and cite a financial reason for their decision.

Perhaps all that is going on here is self-selection. If the non-applicants are merely saving the admissions and fellowship committees the trouble of making a negative decision, we have seriously underestimated the impact of perceived external obstacles. We doubt that this is the case for academic admission, since so few of the students believe they could not be admitted. As for stipend applications, our only information is as follows: Students who expected to go on immediately were asked "Did you apply (or were you nominated) for financial support (scholarship, fellowship, assistantship, etc.) for this Fall?" Those who circled "No," were then asked, "Did you not apply because...?" The distribution of answers from the representative sub-sample is as follows:

	Per cent
Did apply for a stipend	44
Did not, because....	
I wouldn't need any support of this type	21
I didn't think I could get any	17
It didn't occur to me to apply	9
I had no intention of going to school at the time applications were due	4
The amount I would get would have been too little	2
The duties attached would have been unsatisfactory	2
Other	8
*Total	107
	N = 1,210

---

*Total is greater than 100% because of multiple answers on reasons.

The reasons scatter, but we note that 17 per cent of those going on next year said they did not apply because they did not think they would receive any aid, in contrast with 65 per cent who either applied or said they did not need any financial aid.

The nub of the problem, however, is the low rates of application. If we assume that those who were refused stipends would behave like those who were offered one, we get the following results from repercentaging data in Table 6.5 b).

Per cent "Next Year" (RSS)

API	Sex	As is	If all stipend applications were accepted	N
High	Male	52	53	930
	Female	30	31	810
Low	Male	23	23	955
	Female (insufficient applicants to percentage)			

All other things equal, if every stipend application made by the class of 1961 (including a number of clearly unqualified and undesirable applicants) were to be accepted, our data suggest that about one per cent more of the higher API students would go on next year, and there would be no increase among the students with lesser academic performance. The inference here is not that stipend programs should be abolished or that stipends do not affect attendance, but the suggestion is clear that in order to influence attendance rates a stipend program or expansion should be accompanied by a wide-spread publicity program to encourage the rate of applications. The idea appears even more important when we note in Table 6.5 b) that those who were refused stipends have many times the rate of expected enrollment than those who did not apply to a school.

A number of qualifications must be made clear. Undoubtedly the students who did not apply to a school differ in their abilities and motivations in ways which can only be crudely controlled by our API measure and question on financial obstacles. At the very least, the evidence appears pretty firm that it is the reluctance of the student to apply which is the major deterrent to immediate entry into advanced study. It may well be that the non-applicants would be refused, but until they are motivated to apply there is no chance of selecting the promising ones from among them.

While those students citing financial obstacles as a barrier were so pessimistic about their immediate chances that few of them even took the initial steps toward enrollment in Fall, 1961, they show a definite long-range optimism (Table 6.6). A large majority of them expect to attend school later, in contrast with those whose barriers were non-financial. Among high API men, 83 per cent of those citing financial obstacles expected to study later, compared with 64 per cent of those with no financial barriers. Among women and lower API men the comparable figures are about 75 per cent and 50 per cent, respectively. As the students see it, financial obstacles lead to postponement of studies, not abandonment of plans for advanced study.

In summary:

1) The reasons reported by students not planning to go on for advanced study immediately have been analyzed in terms of two broad types of perceived factors, internal motivation and external obstacles.

2) Of the two, internal motivations appear the more common, 70 per cent of those in the "Later" and "Never" categories citing lack of interest or preferring to get practical experience first.

TABLE 6.6

PLANS FOR FUTURE GRADUATE AND PROFESSIONAL STUDY AMONG STUDENTS WHO DO NOT EXPECT TO ATTEND NEXT YEAR BY SEX, ACADEMIC PERFORMANCE AND FINANCIAL OBSTACLES

(Representative Sub-sample)

Sex	A.P.I.	Financial Obstacles*	Plans			Total	
			Later		Never		
			Definite Date	Indefinite		Per cent	N
Male	High	Yes	62	21	17	100	263
		No	49	15	36	100	191
	Low	Yes	51	23	26	100	428
		No	28	18	53	99	317
Female	High	Yes	52	28	19	99	262
		No	34	20	46	100	313
	Low	Yes	52	28	20	100	189
		No	23	25	52	100	224

N = ...	2,187
Expect to Attend Next Year . . .	1,018
NA on API	49
NA on Plans	143
Total N = ...	3,397

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*Yes = "played some part" or "the major reason," No = "had nothing to do with it."

Impressions

Within each sex and academic performance grouping, the student who says that financial obstacles played a part in his decision to not attend school next year is much more likely to expect to attend in the future.

3) Concerning external obstacles, financial barriers are seen by the students as the major external problem, 43 per cent of those not going on citing a financial reason. Depending on the measure used, between 12 and 14 per cent of the total group and 18 to 20 per cent of those not going on, believe that financial obstacles are the major factor preventing immediate advanced study.

4) As the students view it, very few believe that academic deficiency or inappropriate undergraduate training is an obstacle to further study.

5) About five per cent of the total sample appear to be barred from immediate study by military service.

6) Although students who have been refused stipends have less frequent expectations of immediate study, so few of the students had applied for school or stipends that actual rejection plays a small role in affecting plans.

Objective Correlates: Academic Performance and Sex

If one were to take the students at their word, the conclusion would be that academic performance is not a major factor in plans for postgraduate study. Low motivation and financial obstacles are the common reasons given by those who are not planning immediate graduate study. When, however, the Academic Performance Index (API) is introduced into the tabulations, things appear in a different light. The reader will remember that each student's reported cumulative grade point average was weighted by the average academic ability of students at his school to give an index of academic performance, which is our basic measure of intellectual achievement in the study, mass testing of the respondents being precluded on practical grounds.

When the Plans Index is cross-tabulated against API (Table 6.7), strong differences emerge:

> 1) Among the Top Fifth, 54 per cent expect to attend graduate or professional school immediately; among the Above Average, 35 per cent plan to do so; and among the Bottom Half, the figure drops to 22 per cent.

TABLE 6.7

ACADEMIC PERFORMANCE INDEX AND PLANS INDEX

a) Distribution of Academic Performance

Group	Per cent
"Top Fifth"	18.7
"Above Average"	36.7
"Bottom Half"	44.6
Total	100.0%
N = ...	55,759
NA	905
Total Weighted N = . .	56,664

b) Academic Performance and Plans

Plans	Top Fifth	Above Average	Bottom Half	Per cent from . . .				
				Top Fifth	Above Aver.	Bottom Half	Total	
							Per cent	N
Next Year	53.6	35.3	21.5					
Accepted	43.9	21.1	9.5	40.8	38.2	20.9	99.9	10,807
Other .	9.7	14.2	12.0	14.7	42.0	43.3	100.0	6,617
Later	32.2	44.9	49.6					
Def. Date	22.9	30.4	32.5	14.4	37.2	48.4	100.0	15,975
Indefinite	9.3	14.5	17.1	11.9	36.2	51.9	100.0	7,855
Never	14.3	19.8	28.7					
Like to.	2.4	3.9	8.0	8.3	26.3	65.4	100.0	2,920
Other .	11.9	15.9	20.7	12.9	33.7	53.4	100.0	9,232
Total	100.1	100.0	99.8					
N = . .	10,057	19,573	23,776					
NA .	369	905	1,079					
Total N=	10,426	20,478	24,855	55,759				
NA, API				905				
Total Weighted N = ...				56,664				

2) In terms of acceptances, 44 per cent of the Top Fifth had been accepted when they filled out the schedule, in comparison with 21 per cent of the Above Average and 10 per cent of the Bottom Half.

3) Of the group who expect to attend school immediately, 41 per cent are from the Top Fifth, 38 per cent from the Above Average category, and 21 per cent from the Bottom Half.

4) Although there is a continuous falling off in API as one moves through the categories on the Plans Index, the big difference is between those accepted for next year, and the remainder. That is, the students who expected to attend in Fall, 1961 or later, but who had not been accepted by Spring, 1961, are not conspicuously higher in academic performance than students in general.

5) Among those who do not plan to go to postgraduate school ever, the "frustrated" (those who say they would like to go) are distinctly lower in API than the others. Thus, their frustration appears to come from low academic performance, which bars them from advanced study.

Students with high academic performance are considerably more likely to be aiming for postgraduate training, and students who expected to enter advanced study immediately are heavily selected on academic prowess. The relationship is far from perfect, and it is important to note that:

1) Ten per cent of those accepted and 22 per cent of those planning to attend are from the Bottom Half.

2) Almost one-third of the highest API group are postponing their studies. Projecting the total June graduates from our universe of schools at 265,000, this implies that somewhere around 16,000 of the students in the Top Fifth are postponing their studies and around 7,000 do not plan further study beyond the bachelor's degree.[3]

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[3] See Appendix II for detailed projections of Plans by API and Field of Study.

Remembering that API is made up of two components, school quality and grade point average, it is interesting to see whether both factors contribute to the relationship. Table 6.8 indicates that both do. Among students with grade point averages (GPA) of B+ or higher, 63 per cent of those from the highest quality schools planned immediate graduate work in comparison with 41 per cent of those from the lowest group of schools. Similarly, within a school quality level there is a progressive variation with GPA. The school difference remains, interestingly, when sex and career type are also controlled (Table 6.9). When career fields are divided into those where generally half or more anticipated going on next year (High Go Career Fields) versus those where less than half had such plans (Low Go Career Fields), the relationship remains with each career type. Thus, among men with High Go career preferences (essentially the major professions and Arts and Sciences) 94 per cent of those with B+ or better averages from the top institutions planned to go on immediately, in contrast with 43 per cent of those with C+ or lower averages from the least distinguished institutions. We shall not speculate on whether the effect is simply due to the calibre of the students recruited to the school or whether exposure to a "high quality" institution leads to enhanced probability of going on, for this question is the subject of extensive analyses to be reported elsewhere. However, we shall reiterate that both components of the Academic Performance Index contribute, independent of sex and general career type.

While API is a major predictor of Plans, sex is almost as important (Table 6.10), and the combination of both factors produces a striking range in Plans (Table 6.11). Among the men 39 per cent expected to attend immediately; among women the figure is 24 per cent. You will remember that women were more likely to be high academic performers, 63 per cent of the women

TABLE 6.8

STUDENT'S REPORTED CUMULATIVE GRADE POINT AVERAGE, CLASSIFICATION OF SCHOOL ON NATIONAL MERIT SCHOLARSHIP INDEX, AND PLANS INDEX (RSS)

(Per cent Expecting to Attend Graduate or Professional School Next Year)

GPA	School Type					
	I-II		III		IV	
B + or Higher . .	63	(84)	49	(307)	41	(199)
B	58	(59)	43	(247)	31	(155)
B-	49	(147)	32	(449)	27	(264)
C + or Lower . .	34	(147)	19	(751)	16	(399)

N = ... 3,208
NA, Grade Point Average 46
NA, Plans 143
Total N = ... 3,397

TABLE 6.9

SEX, CAREER TYPE, GRADE POINT AVERAGE, SCHOOL QUALITY, AND PLANS (RSS)

(Per cent expecting to attend graduate or professional school next year)

Career Type	GPA	Men			Women		
		School Group			School Group		
		I-II	III	IV	I-II	III	IV
High Go	B+	94 (18)	84 (61)	72 (36)	75 (16)	72 (39)	40 (15)
	B, B-	91 (56)	72 (131)	61 (49)	64 (14)	55 (44)	50 (14)
	C+	66 (29)	53 (113)	43 (47)	- (6)	30 (27)	- (9)
Other	B+	62 (24)	45 (89)	45 (49)	36 (25)	26 (106)	26 (88)
	B, B-	45 (73)	30 (212)	32 (180)	18 (50)	23 (285)	18 (152)
	C+	30 (61)	13 (348)	12 (208)	22 (45)	15 (223)	12 (91)

N = ...	3,033
NA, Career Type Only	172
NA, Grade Point Average Only . . .	45
NA, Plans Only	121
NA, Two or More	26
Total N = ...	3,397

TABLE 6.10

SEX AND PLANS INDEX

Plans	Male		Female		Per cent Male
Next Year	38.8		23.6		
Accepted		25.9		11.9	76.0 (10,933)
Other		12.9		11.7	61.3 (6,722)
Later	41.4		49.2		
Definite Date		29.7		30.2	58.7 (16,218)
Indefinite		11.7		19.0	47.1 (7,980)
Never	19.8		27.1		
Like to		6.0		4.7	64.8 (2,972)
Other		13.8		22.4	47.2 (9,411)
Total per cent .	100.0		99.9		
N = ...	32,071		22,165		
NA	1,435		993		
Total N = . .	33,506		23,158 = 56,664 Total Weighted N		

TABLE 6.11

SEX, ACADEMIC PERFORMANCE INDEX, AND PLANS INDEX

a) Sex and Academic Performance

Sex	Academic Performance				
	Top Fifth	Above Average	Bottom Half	Total	
				Per cent	N
Male .	17.0	33.0	50.0	100.0	32,957
Female	21.2	42.1	36.7	100.0	22,802

N = ... 55,759
NA, API 905
Total Weighted N = ... 56,664

b) Plans Index by Sex and Academic Performance

Sex	Academic Performance	Plans				
		Next Year	Later	Never	Total	
					Per cent	N
Male	Top Fifth	68.4	23.3	8.4	100.1	5,416
	Above Average	45.3	40.1	14.6	100.0	10,387
	Bottom Half	24.4	48.5	27.1	100.0	15,769
Female	Top Fifth	36.3	42.6	21.2	100.1	4,641
	Above Average	24.0	50.3	25.7	100.0	9,186
	Bottom Half	16.0	52.0	32.0	100.0	8,007

N = ... 53,406
NA, API 830
NA, Plans 2,428
Total Weighted N = ... 56,664

being in the Top Half in comparison with 50 per cent of the men [Table 6.11 a)]. Because API and being a male are negatively associated, but both are positively associated with Plans for Next Year, the combination of sex and API makes a powerful prediction of Plans [Table 6.11 b)]. Without considering career field at all, we find a range in Plans for Next Year from 68 per cent of the men in the Top Fifth to 16 per cent of the women in the Bottom Half. It also appears that there is an "interaction" between sex, API, and Plans, which can be put alternatively as: API makes more difference among the men (OR) sex makes a greater difference among those high on API. Thus, in the Bottom Half the sex difference in the per cent Next Year is a modest eight per cent, while in the Top Fifth, the difference amounts to 32 per cent.

One would think that the obvious reason why women are less likely to anticipate further study is that most of them are planning to get married and raise families instead. Apparently, it isn't quite that simple. To begin with, less than five per cent of the women indicated that they did not plan to work after college, and in terms of Fall, 1961, two-thirds of the women did not expect to be married [Table 6.12 a)]. The question of the relationship between marital status and postgraduate plans is an important one, and deserves careful analysis because the trends are rather complicated.

Table 6.12 b) gives the relationship between family status and the Plans Index controlling for sex and API. The differences are not entirely clear-cut, but the important trends appear to be as follows:

Among men who are high on API, the sheer fact of being married has little impact on Plans. For the single

TABLE 6.12

MARITAL STATUS AND PLANS INDEX, CONTROLLING FOR SEX AND ACADEMIC PERFORMANCE (RSS)

a) Marital Status by Sex and Academic Performance

Academic Performance Index	Sex	Marital Status				Total	
		Single		Married			
		Don't Expect to Be Married Before Fall, 1961	Expect to Be Married Before Fall, 1961	No Children	One or More or Expecting	Per cent	N
Top Fifth and Above Average	Male	62	10	10	18	100	978
	Female	66	17	6	10	99	836
Bottom Half	Male	57	11	9	22	99	1,008
	Female	66	18	8	8	100	496

N = ... 3,318
NA or Ex-Married 27
NA, API 52

Total N = ... 3,397

TABLE 6.12--Continued

b) Marital Status and Plans Index, Controlling for Sex and Academic Performance

Sex	Academic Performance	Plans	Marital Status			
			Single		Married	
			Don't Expect to Be Married Before Fall, 1961	Expect to Be Married Before Fall, 1961	No Children	One or More or Expecting
Male	Top Fifth and Above Average	Next Year	56	45	55	38
		Later	33	40	32	47
		Never	11	14	13	15
	Total		100%	99%	100%	100%
	N = ...		382	99	88	166
	Bottom Half	Next Year	22	17	27	24
		Later	49	51	42	46
		Never	29	31	31	30
	Total		100%	99%	100%	100%
	N = ...		550	109	84	216
Female	Top Fifth and Above Average	Next Year	36	15	23	16
		Later	45	48	44	57
		Never	19	38	33	28
	Total		100%	101%	100%	101%
	N = ...		332	143	48	83
	Bottom Half	Next Year	18	6	8	12
		Later	54	47	58	53
		Never	28	47	35	35
	Total		100%	100%	101%	100%
	N = ...		314	85	40	40

N = ...	3,179
NA or Ex-Married	26
NA, API	49
NA, Plans	143
Total N = ...	3,397

men 56 per cent expected to go on "Next Year," and for those either expecting to be married before Fall, 1961 or married men with no children, 50 per cent expected to go on "Next Year." For the fathers, however, the figure drops to 38 per cent (which is, however, higher than for single low API men). Since there is no difference by family status in "Never," we may conclude that for high API men, being a father leads to postponement of graduate studies, but marriage per se has little effect. Among low API men, there are no differences in Plans regardless of family situation. As high API fathers constitute only nine per cent of the men, family responsibilities do not appear to be a major factor affecting rates of graduate study. However, it may be expected that as the early years after college take their toll of bachelors and childless husbands, families will play a major part in affecting whether members of the "Later" group actually begin their studies.

Among the women, the impact of marriage is a little different. Married women, regardless of whether or not they have children, are less likely to anticipate graduate school. Among the high API women, for example, 36 per cent of those who were single and did not expect to be married before Fall expected to go on immediately, in comparison with 15 per cent of the engaged girls, 23 per cent of the married women with no children and 16 per cent of the mothers. Among the attached, however, the mothers, if anything, have higher educational aspirations than the brides! Thus, among the high API women 38 per cent of the engaged are classified as Never in comparison with 28 per cent of the mothers. Does this mean that after the honeymoon is over women increase their interest in graduate training? More probably it means that the married women with children in our sample are quite unrepresentative. They undoubtedly have a greater motivation for higher education or they wouldn't be able to overcome the difficulties of completing undergraduate work while raising a family.

Do these relationships explain the sex difference in Plans? Comparing men and women in the same family categories and API groups, we see that in each case men are more likely to anticipate graduate work. It is hardly surprising that married men have higher rates than married women, but the fact that among high API students who expected to be single in Fall, 1961, 56 per cent of the men and 36 per cent of the women planned to go on immediately is a little more surprising. Now, it may be that the girls' anticipation of a future family pulls their interest down, but the sex difference in Plans is independent of the current marital situations of these young people.

We have seen in Chapters III and IV that sex and API are strongly associated with careers in ways that might well affect these results. For example, students aiming for Medicine are very high on API and future physicians are very high on Next Year; girls are strongly attracted to Education, which is typically a Later field. Therefore, we want to examine the simultaneous relationships between sex, API, career, and the Plans Index. Table 6.13 gives the per cent expecting to go on in Fall, 1961 by sex, API, and a detailed occupational breakdown. Clearly, the sex and API differences are not artifactual. In every comparison where there are 50 or more cases per cell (except for Social Work where Top Fifth and Above Average API do not differ much), there is a steady progression in Plans for the three API categories. For instance, among men in Physics, 90 per cent of those in the Top Fifth, 63 per cent of those Above Avarage, and 42 per cent of those in the Bottom Half planned to go on immediately. Similarly, in every single comparison where there are 50 or more cases, men are more likely to anticipate graduate study within an API and career grouping.

TABLE 6.13

ANTICIPATED FUTURE CAREER, SEX, ACADEMIC PERFORMANCE, AND PLANS INDEX

(Per cent Expecting to Enter Graduate or Professional School Next Year)

Career	Academic Performance Index					
	Male			Female		
	Top Fifth	Above Average	Bottom Half	Top Fifth	Above Average	Bottom Half
Medicine . . .	98 (551)	92 (574)	74 (221)	- (34)	44 (52)	- (34)
Law	86 (490)	80 (696)	66 (704)	- (25)	73 (56)	- (21)
Bio. Sciences.	92 (90)	72 (196)	49 (298)	47 (148)	40 (192)	25 (146)
Physics . . .	90 (273)	63 (161)	42 (155)	- (33)	- (11)	- (2)
Other Physical Sciences . .	86 (67)	55 (129)	24 (131)	- (19)	- (25)	- (4)
Chemistry . .	81 (170)	69 (238)	40 (292)	49 (76)	28 (105)	10 (69)
Social Sciences	76 (341)	64 (497)	39 (512)	58 (260)	35 (310)	28 (144)
Humanities . .	80 (492)	36 (494)	33 (499)	56 (697)	35 (715)	20 (410)
Mathematics .	86 (159)	57 (180)	19 (230)	37 (122)	13 (86)	- (42)
Other Professions	72 (323)	53 (623)	50 (927)	36 (315)	23 (484)	18 (531)
Engineering .	63 (827)	35 (1,491)	17 (1,979)	- (6)	- (20)	- (19)
Education . .	52 (434)	41 (1,602)	25 (3,002)	30 (1,950)	23 (4,901)	16 (4,537)
Other Health Professions.	- (49)	52 (181)	42 (403)	21 (263)	19 (662)	15 (508)
Social Work .	- (16)	77 (53)	33 (139)	30 (131)	32 (290)	12 (321)
Agriculture and Related.	38 (72)	33 (217)	12 (442)	- (3)	- (2)	- (1)
Business and Administration	36 (850)	23 (2,559)	10 (4,704)	17 (239)	13 (497)	13 (563)

N = ...	49,814
Respondent circled "Job which has no near equivalent on this list" .	1,434
Does not expect to work after graduation	862
NA, Plans	2,428
NA, API	830
NA, Career Field	1,296
Total Weighted N = ...	56,664

To take an example where there is little sex difference in career choice, among social scientists in the Top Fifth, 76 per cent of the men and 58 per cent of the women anticipated immediate advanced study.

The sex and API differences are so strong within each occupational preference, one wonders whether the occupational differences might be spurious, whether the Plans rates for various fields can be explained by their sex and API composition. This does not seem to be the case. When the actual per cent Next Year for each field is correlated with the per cent which would be expected if each field were made up of equal proportions for Above Average and Bottom Half API men (the only two groups in Table 6.13 with sufficient cases in each occupational preference) the adjusted rates show a very striking correlation with the "raw" figures.

Our general conclusion is that sex, academic performance, and career choice contribute independently toward the prediction of Plans for advanced study. Their joint effects are shown in Table 6.14 which also classifies those not going on by the reasons reported, so that the type of reason associated with these characteristics can be examined. As Table 6.14 a) contains a considerable amount of information, it may help to break it down.

First, let us look at the per cent expecting to go on for advanced study in Fall, 1961.

Per cent Expecting Advanced Study Next Year

Career	A.P.I.			
	Low		High	
	Women	Men	Women	Men
Law, Medicine . .	42 (55)	69 (917)	70 (167)	89 (2,304)
Arts and Sciences	22 (770)	37 (1,986)	45 (2,723)	73 (3,373)
All Other	16 (6,452)	20 (11,566)	25 (9,700)	40 (9,301)

TABLE 6.14

SEX, A.P.I., AND CAREER TYPE BY PLANS FOR ADVANCED STUDY AND REASONS FOR NOT GOING ON FOR ADVANCED STUDY

a) All Variables

Future Career	A.P.I.	Sex	Plans				Total	
			Next Year	Later or Never				
				Motivational Reason*	Financial Obstacles*		Per cent	N
					Yes	No		
Law or Medicine	High	Male	89	3	4	4	100	2,304
		Female	70	11	16	4	101	167
	Low	Male	69	7	10	14	100	917
		Female	42	38	7	13	100	55
Arts and Sciences	High	Male	73	14	8	5	100	3,373
		Female	45	43	11	1	100	2,723
	Low	Male	37	31	22	10	100	1,986
		Female	22	59	13	7	101	770
Other	High	Male	40	41	13	7	101	9,301
		Female	25	62	12	1	100	9,700
	Low	Male	20	51	17	12	100	11,566
		Female	16	70	11	3	100	6,452

N = ...	49,314
NA, API	724
NA, Plans	2,428
NA, Career Type	3,538
NA, Reasons No Go	571
NA, One or More	89
Total Weighted N = ...	56,664

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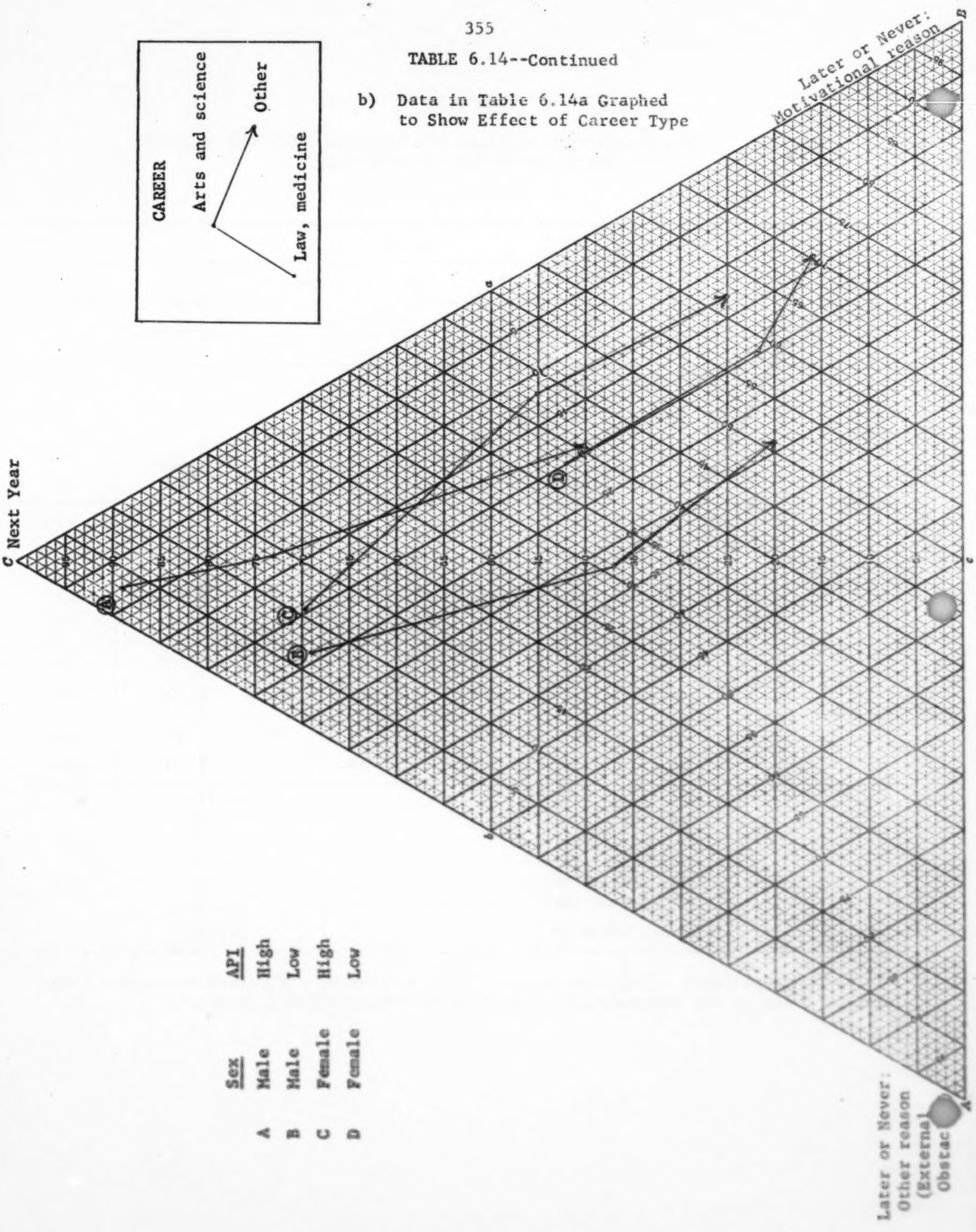
*Reasons index is defined in Table 6.3; Motivation = Positive response to one or more items in the "Motivation" cluster or to "Practical Experience."

TABLE 6.14--Continued

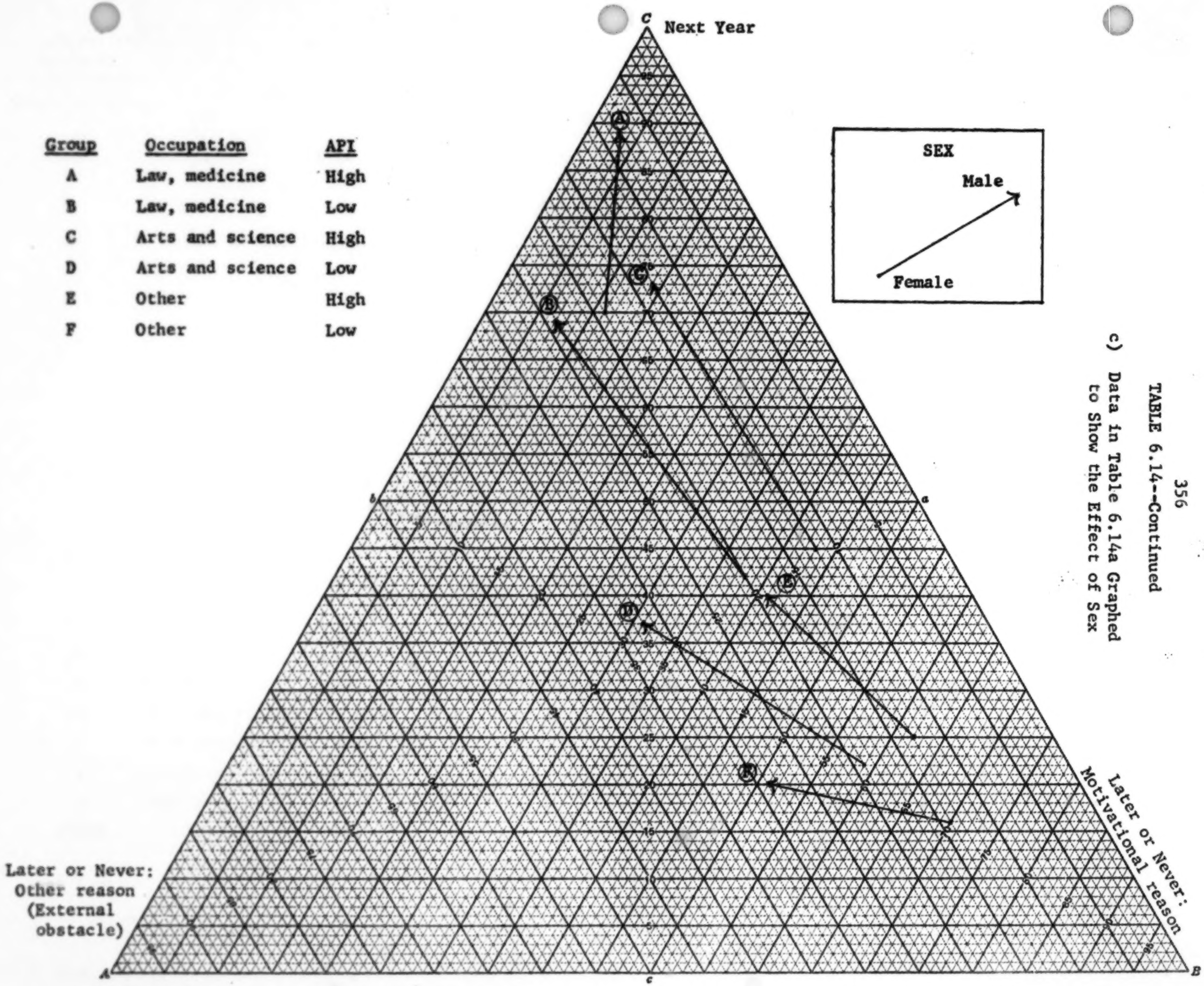
b) Data in Table 6.14a Graphed to Show Effect of Career Type



	Sex	API
A	Male	High
B	Male	Low
C	Female	High
D	Female	Low

TABLE 6.14--Continued

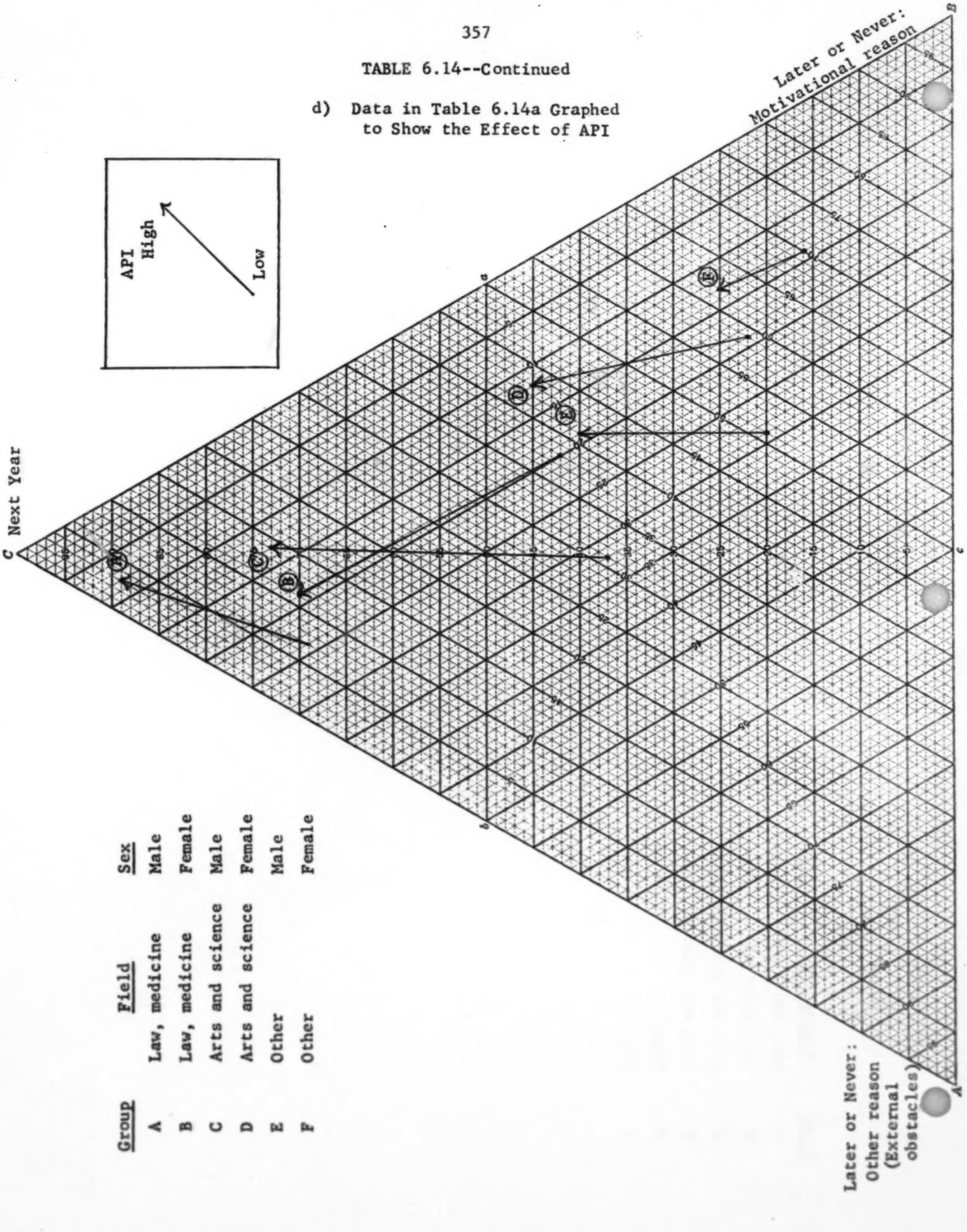
c) Data in Table 6.14a Graphed to Show the Effect of Sex



Group	Occupation	API
A	Law, medicine	High
B	Law, medicine	Low
C	Arts and science	High
D	Arts and science	Low
E	Other	High
F	Other	Low

TABLE 6.14--Continued

d) Data in Table 6.14a Graphed to Show the Effect of API



Group	Field	Sex
A	Law, medicine	Male
B	Law, medicine	Female
C	Arts and science	Male
D	Arts and science	Female
E	Other	Male
F	Other	Female

Considering Law and Medicine as the fields with the highest rates for Next Year,[4] Arts and Science fields as next, and all other fields as "Low Go," we see a range from 16 per cent to 89 per cent Next Year as we move from low API women in "Low Go" to high API men in the major professions.

Considering as less motivated any student not going on immediately who circled one or more of the items in the low interest cluster or who circled "I want to get practical experience first," we can see how many students in these categories give a motivational explanation.

Per cent Not Going Next Year Who Give a Motivational Reason

Career	A.P.I.			
	Low		High	
	Women	Men	Women	Men
Law, Medicine	38	7	11	3
Arts and Sciences . .	59	31	43	14
All Other	70	51	62	41

N's are the same as in the preceding table.

There are strong sex, API, and career differences in motivation. Women, students lower in API, and students in the fields where graduate work is of less strategic significance are more likely to not go on immediately and to cite a motivational reason (of course, many give other reasons too). Among high API men aiming for careers in Law or Medicine, three per cent fall in this category, while among low API women in the "Low Go" fields, 70 per cent are so classified.

A rough test of whether motivational differences "explain" the observed differences by field, sex, and API, can be made by dividing the students into three groups: a) Those in the "Next

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[4] The career differences would be even greater if certain very small "High Go" fields such as Dentistry or Theology were added.

Year" category on Plans, b) Those in "Later and Never" who cite a motivational reason, and c) Those in "Later and Never" who do not cite a motivational reason and thus can be considered as facing external obstacles. When these figures are plotted on triangular coordinate graph paper, we can determine which factors vary with which type of plans [Tables 6.14 b), 6.14 c), 6.14 d)].

The career differences appear to be almost entirely due to differences in motivation. In Table 6.14 b), the per cent Next Year and the per cent "Not motivated" vary regularly as one moves from Law and Medicine to Arts and Sciences to Other, within each sex and API group. There are almost no systematic career differences in External Obstacles, defined here as students not planning to go on immediately, but not citing a motivational reason. The finding is obvious in a sense and tends to corroborate our previous interpretations of career differences in Plans, but the effect is worth comment. Since, for instance, there is (as will be shown later) much less stipend aid available for students in Law and Medicine than for those in Arts and Sciences, one might think that lawyers and doctors might be higher on external obstacles, which are often financial. Or since Arts and Science graduate schools are probably more selective than Other Fields, one might expect that the Arts and Science group would be higher on External Obstacles than the students in Other careers. Regardless of these possibilities, it appears that differences in motivation are the major differences between the broad groups of careers.

Table 6.14 c) suggests that, as for career fields, the major factor in the sex difference is motivation. Regardless of API and career type, women are much more likely to be in the group characterized by lower motivation while sex differences in internal obstacles are not consistent.

The API difference [Table 6.14 d)] also appear to be heavily motivational. Except for males aiming at Law and

Medicine, the students of lesser academic performance have a distinctly greater percentage citing low motivation and no greater percentage attributing their decision to external obstacles. Among the small group of men planning careers in Law and Medicine, however, lower API goes with perceived external obstacles, not motivation. These findings go some way in explaining the discrepancy between the subjective reasons and the objective data on API. The student whose academic capacities are less outstanding apparently does not typically define this as a personal limitation, but rather defines the situation in such a way that graduate study appears less attractive.

Because financial obstacles are only one part of the external obstacle category, it is possible that the analysis above has concealed relationships between sex, API, career type and financial obstacles. When, however, this reason is tabulated separately, no consistent differences turn up. The following data from Table 6.14 a) give the per cent of students who a) are not going on immediately, b) do not cite a motivational reason, and c) do give financial obstacles as their explanation.

Per cent Not Going Next Year Who Cite Only Financial Obstacles as Reason

Career	A.P.I.			
	Low		High	
	Women	Men	Women	Men
Law, Medicine . .	7	10	16	4
Arts and Sciences	13	22	11	8
Other	3	17	12	13

N's are the same as in the preceding table.

The percentages are not identical and fluctuate from three to 22, but no discernible pattern emerges which would enable us to say that perceived financial obstacles are related to sex, API, or career type. It should also be noted that in the strategic groups of high API men in Arts and Sciences and Law and Medicine, few students fall into this reasons category. Many more, of course, circled Financial Obstacles in the questionnaire, but among high API men only eight per cent in Arts and Sciences and four per cent in Law and Medicine fall in the group who are not going on immediately and give financial, but not motivational reasons for their decision.

To summarize:

1) There is a striking API difference in Plans for Next Year. Regardless of sex, career field, or marital status, the academically superior are much more likely to plan immediate study. When the differences are examined in terms of the data on reasons, it appears that the lower API student sees his decision as stemming from lower motivation,not necessarily from perceived obstacles to advanced study.

2) Regardless of career field, API, or marital status, women are much less likely to plan immediate graduate study. Even among girls with no immediate marital plans, the difference is considerable. Examination of the reasons data suggests that the sex difference is primarily due to differences in motivation, not to perceived financial or other external obstacles.

3) Marital and family status play some role, but their effects are not consistent. The small group of high API married men with children do have a tendency for postponement, but among lower API men there is no difference, and among women the difference comes from marriage _per se_, not from the presence of children.

4) Within a sex and API group, career field continues to make for strong differences in Plans. Thus, among high API men, 89 per cent of those going into Law and Medicine anticipated immediate study in comparison with 73 per cent of those going into Arts and Sciences and 40 per cent of those in other fields. It should be noted, nevertheless, that high API men in Other occupations have about the same per cent anticipating immediate study as low API women in Law and Medicine, the variation by sex and API within occupations being considerable.

We are now able to give a more rounded view of the crucial issue of "talent loss." While it is a fact that the over-all rates of postponement are rather frightening, particularly in the strategic Arts and Science fields, when sex and API are taken into consideration, the figures appear somewhat less grim. Without appearing to be anti-feminist or endorsing intellectual elitism, it is reasonable to state that males in the Top Fifth on API constitute the most strategic group. By re-percentaging data in Table 6.13, we arrive at the following figures for the per cent of high API men expecting to begin advanced study in Fall, 1961:

	Per cent	N
Medicine	98	131
Biological Sciences . . .	92	90
Physical Sciences	86	110
Humanities	80	482
Social Sciences	76	361

The fact that one out of five Top Fifth males in Humanities and Social Sciences is not going on immediately is not heartening, but in Medicine and the Natural Science fields, the talent loss is small. In absolute terms the figures do appear impressive, but viewed in terms of percentages one can hardly claim the existence of a shocking situation.

Objective Correlates: Background Characteristics

The factors considered so far--sex, API, and career preference--have an obvious direct connection with advanced study. After all, the strategic significance of graduate work varies with anticipated lines of work, the significance of having a career at all varies with sex, and the higher motivation of the academically able hardly appears puzzling. In turning to consideration of social background characteristics--race, SES, hometown, and religion--we come to an area where connections are less obvious and problems of social policy begin to loom. It is therefore useful to begin with a disclaimer. We shall see in this section that social factors do affect plans for postgraduate study, independent of the control variables of sex, API, and career type. At the same time, these differences are limited in scope. For instance, our conclusion will be that while SES does have an effect on plans, the SES effect is much smaller than the API difference. In contrast, a large number of research studies on the college plans of high school students tend to show that SES and IQ contribute about equally to anticipations of college attendance. While we shall show differences similar in direction to previous research at earlier educational levels, it is important to remember that the strength of the effects is generally less.

This diminution appears to be progressive as one moves up the educational ladder. In NORC's survey of Arts and Science graduate students already enrolled,[3] background factors appeared to make very little difference in career plans and outcomes. The trend is not inexplicable by any means. The lower class or small town or minority group student who has survived the attrition process to graduate from college is undoubtedly quite unrepresentative of his subgroup to begin with, has been exposed to a relatively cosmopolitan upper status environment for some time, and, in most cases, has been living away from his early milieu (twenty-three per cent of the total sample lived with their parents during their senior year, 43 per cent went to a school beyond "commuting distance" of their hometown--RBH). Thus, compared with younger and older people, the graduating senior may be seen as having a certain freedom from the powerful pressures of class, community, and subculture. He has been liberated from his early home environment and has not yet established his adult niche. Thus, for these young people, perhaps more than for any other group in the nation, the effects of class and subculture are diminished. That they appear at all is a wry tribute to the power of social groupings to affect individual decisions.

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[3] James A. Davis, *et. al.*, *op. cit.*

Race

Although the small number of students of Oriental extraction report even higher proportions going on immediately when compared with Whites (42 per cent as compared with 32 per cent), Negro students appear at a slight disadvantage (Table 6.15). Twenty-eight per cent of them were classified as "Next Year." This difference in itself is trivial, but as only four per cent of the Negroes, in contrast with 24 per cent of the Whites, fall into "Never" it means that a high proportion of Negro students appear to be postponing their studies. Thus, of those in Next Year or Later, 58 per cent of the Whites and 70 per cent of the Negroes fall into "Later." The small difference in Next Year appears as a sharp disadvantage for Negro seniors when evaluated in terms of the total number who anticipate graduate study.

Our procedure has been to compare Negroes with Protestant lower SES, smaller hometown Whites as well as with White students in general because Negroes tend to be Protestant, lower in SES and from smaller cities. In Table 6.16 a) we see Plans and Reasons tabulated for Negroes, Whites in general, and white Protestants who are low SES and from smaller cities. (The Index of Background Characteristics is defined in Chapter III.) The results tend to support the inference that Negroes have a relatively high interest in advanced study but considerable obstacles to immediate enrollment.

> a) When compared with Whites in general, Negroes are a little less likely to anticipate immediate study, but when matched with comparable Whites, more Negroes are in Next Year (29 per cent v. 23 per cent).

TABLE 6.13

RACE AND PLANS INDEX, CONTROLLING FOR SEX AND ACADEMIC PERFORMANCE INDEX

Race	Plans Index			Total	
	Next Year	Later	Never	Per cent	N
Oriental . .	42.0	37.0	20.8	99.8	927
White . . .	32.4	43.9	23.5	99.8	30,293
Negro . . .	28.3	67.1	4.4	99.8	1,622
Other . . .	18.9	58.3	22.6	99.8	386

N = ... 33,228
NA Race 1,008
NA Plans 2,428
Total Weighted N= 36,664

TABLE 6.16

RACE, PLANS, AND REASONS FOR NOT GOING ON NEXT YEAR

a) Controlling Background Characteristics

Index of Background Characteristics	Plans				Total	
	Next Year	Later or Never				
		Motivational Reason	Financial Obstacles		Per cent	N
			Yes	No		
All white	32	49	12	6	99	45,582
Negro	29	31	36	6	100	1,609
Protestant, low SES, smaller city whites . .	23	51	20	6	100	9,916

N = ...	47,191
NA Background	6,676
NA Plans	2,428
NA Reasons No Go	371
Total Weighted N = ...	56,666

TABLE 6.16--Continued

b) Controlling Career Field, Sex and A.P.I.*

Career	Sex	A.P.I.	Race	Plans				Total	
				Next Year	Later or Never				
					Motivational Reasons	Financial Obstacles		Per cent	N
						Yes	No		
Arts and Sciences	Male	Low	All whites .	37	32	21	10	100	1,636
			Negroes . .	40	7	34	19	100	83
			Comparable whites# .	22	36	30	12	100	476
Other	Male	High	All whites .	40	41	12	7	100	8,087
			Negroes . .	39	19	38	4	100	170
			Comparable whites# .	33	43	18	6	100	1,816
		Low	All whites .	20	52	16	12	100	9,997
			Negroes . .	28	28	33	12	101	304
			Comparable whites# .	16	52	22	10	100	2,831
	Female	High	All whites .	23	65	11	1	100	8,323
			Negroes . .	23	31	44	2	100	298
			Comparable whites# .	16	63	19	1	99	1,333
		Low	All whites .	14	73	10	2	99	5,137
			Negroes . .	23	49	24	3	99	378
			Comparable whites# .	8	74	17	1	100	1,286

N = ...	36,413
Excluded:	
Law and Medicine	3,111
Women in Arts and Sciences	3,008
High A.P.I. men in Arts and Sciences . . .	2,956
NA, A.P.I.	692
NA, Career Field	3,013
NA, Background	6,676
NA, Plans	2,420
NA, Reasons Not Going	371
Total Weighted N = ...	58,686

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*Law and Medicine, women in Arts and Sciences, and high A.P.I. men in Arts and Sciences have been excluded because the weighted total of Negro cases in each of these categories is less than 50.

#Low SES and smaller hometown on Index of Background Characteristics.

b) Negroes are considerably less likely to report low motivation (31 per cent) when compared with either group of Whites, where about half fall in this group.

c) Negroes are considerably more likely to report external financial obstacles (34 per cent) when compared with Whites in general (12 per cent) and also when compared with Protestant low SES, smaller city Whites (20 per cent).

d) There is no difference by race in the per cent reporting non-financial external obstacles.

Because the Negro students are more often female and less often high on API, these factors, as well as career type, should be controlled. This is done in Table 6.16. There were too few Negro cases for tabulations in Law and Medicine, women in Arts and Science career fields, and high API men in Arts and Science career fields. In the remaining groups the trends noted above remain when sex, API, and career field are controlled: Within a sex, API, and career type: 1) Negroes are as likely to go on immediately as Whites in general, and more likely to go on than Protestant low SES, smaller hometown Whites; 2) Negroes are considerably less likely to be low on motivation, the percentage differences running 20 or more in each comparison with either White control group; 3) Negroes are distinctly more likely to report financial obstacles when compared with all Whites and somewhat more likely to do so when compared with Protestant low SES, smaller city Whites; 4) there are no important differences in the proportion reporting themselves as blocked by non-financial external obstacles.

These materials can be interpreted as suggesting that the Plans distribution for Negroes is a resultant of contradictory forces. On the one hand, Negroes are strongly motivated for graduate study, generally speaking, and particularly when matched with Whites of similar religion, sex, API, career type, SES, and hometown. On the other hand, the Negro student is much more likely to see the external obstacle of finances as barring him from immediate study, even when matched with low SES Whites, (it should be noted that the Negro students probably come from families lower in SES than our group of low SES Whites, so these findings do not demonstrate that there is a racial financial bar in addition to the SES one, but they do tell us that Negroes as a whole see their financial obstacles as worse than the bottom half in SES among Whites) and he suffers from the greater external obstacles common to lower SES, smaller city students. The outcome of all of this is that Negro students, when compared with Whites similar in other characteristics, are more likely to anticipate immediate advanced study than disadvantaged Whites, and just about as likely as Whites in general. At the same time, it is clear that it is high motivation which is producing the favorable outcomes, for considering only students motivated to go on, the Negroes are much less likely to anticipate going "Next Year" than are Whites comparable in religion, sex, API, SES, hometown, and career type.

SES and Hometown Among Whites

Turning now to the White students in the Index of Background Characteristics, we shall examine the effects of socio-economic status of the parental family and size of hometown. Each has an effect on Plans for advanced study and because of their strong statistical association, it is necessary to consider them simultaneously.

Both in terms of its components and taken as a global index, socio-economic status is positively related to plans for attending graduate school immediately after graduation. In terms of income [Table 6.17 a)], there is a range in Next Year from 29 per cent among those reporting parental incomes of less than $3,000 to 40 per cent among those reporting

TABLE 6.17

PLANS INDEX AND SOCIO-ECONOMIC STATUS

a) Income and Plans

Reported Annual Income of Parental Family	Next Year	Later	Never	Total	
				Per cent	N
Less than $5,000 . . .	28.7	52.4	18.9	100.0	9,506
$5,000 - $7,499 . . .	31.4	48.0	20.5	99.9	12,954
$7,500 - $9,999 . . .	33.0	45.6	21.4	100.0	8,384
$10,000 - $14,999 . .	35.8	40.8	23.4	100.0	7,500
$15,000 - $19,999 . .	35.6	37.7	26.6	99.9	3,089
$20,000 and over . . .	40.4	31.1	28.5	100.0	5,004

N = ...	46,437
Don't Know Income	6,082
NA on Income	1,717
NA on Plans	2,428
Total Weighted N = ...	56,664

b) Occupation of Father and Plans

Occupation of Father	Next Year	Later	Never	Total	
				Per cent	N
Professional	38.5	39.0	22.3	99.8	11,929
Proprietor/manager . .	33.1	39.9	26.7	99.7	12,239
Sales	31.4	43.9	24.5	99.8	3,257
Clerical	33.2	46.3	20.3	99.8	1,870
Skilled	31.1	48.3	20.4	99.8	8,292
Semi-skilled	28.7	53.5	17.6	99.8	3,664
Service	31.6	49.0	19.2	99.8	1,528
Unskilled	27.5	51.4	20.8	99.7	1,671
Farmer	21.8	51.8	26.3	99.9	3,840

N = ...	48,290
NA Father's Occupation only*	1,584
NA Plans only	2,128
NA on Both	82
Total listing Father as head of household	52,084
Excluded: Total listing Mother as head of household .	4,580
Total Weighted N = ...	56,664

*Including respondents who indicated only that father was retired.

TABLE 6.17--Continued

c) Father's Education and Plans

Father's Education	Plans			Total	
	Next Year	Later	Never	Per cent	N
8th grade or less . . .	29	50	21	100	11,571
Part high school	31	48	20	99	8,480
High school graduate . .	30	46	24	100	11,043
Part college	33	43	24	100	7,858
Bachelor's degree . . .	34	38	28	100	7,033
Graduate or professional degree	44	36	20	100	6,828

N = ... 52,813
NA, Father's Education 1,423
NA, Plans 2,428

Total Weighted N = ... 56,664

$20,000 or more. For father's occupation [Table 6.17 b)] the range is from 22 per cent for farmer fathers to 38 per cent for professional fathers. For father's education [Table 6.17 c)], 29 per cent of those reporting eight grades or less were categorized as Next Year on the Plans index in contrast with 44 per cent of those whose fathers themselves had gone on to graduate school.

It is interesting also to note that the per cent Never also increases with income; for father's occupation the children of proprietors are higher on Never than children of any other group; and for father's education the per cent Never increases up to the bachelor's degree and then drops for those whose fathers have gone to graduate or professional school. The suggestion is one of a pocket of upper class disinterest in advanced study, the son of the owner often not needing a master's degree in business administration to rise in the corporate hierarchy. Examination of the partial data on parental occupation (Table 6.18) shows that the difference disappears among women but remains among the men, sons of managers, proprietors and salesmen being higher on Never than other sons, an indirect support of the interpretation. Not too much should be made of this eddy in the data, for even among men from the bottom half in API, two-thirds of the businessmen's sons plan graduate study, although the figure is lower than the three-quarters which is typical of most of the other occupational groups among men in the bottom half on API.

Since most of these differences were coming from extremes on the measures, when the data are based on the simple division of the SES index into high and low, we see that 36 per cent of the Highs and 29 per cent of the Lows anticipated immediate graduate study. (Table 6.19) There is no zero order SES difference in motivation or non-financial external obstacles, but although high SES students have 8 per cent in the financial obstacles category, low SES students have 17. Thus, the zero

TABLE 6.18

OCCUPATION OF HEAD OF PARENTAL FAMILY (FATHER OR MOTHER) AND PLANS, CONTROLLING FOR SEX AND A.P.I.

A.P.I.	Parental Occupation	Male					Female				
		Next Year	Later	Never	Total		Next Year	Later	Never	Total	
					%	N				%	N
Top Fifth	Professional .	75.7	19.0	5.3	100.0	1,673	38.3	37.9	23.8	100.0	1,678
	Prop/Mgr. . .	66.9	21.9	11.2	100.0	1,372	36.4	44.1	19.5	100.0	1,121
	Sales	68.9	20.4	10.7	100.0	383	31.2	40.8	28.1	100.1	292
	Clerical . . .	68.2	24.3	7.6	100.1	276	37.4	40.6	21.9	99.9	283
	Skilled . . .	64.0	26.9	9.1	100.0	628	38.7	47.5	13.9	100.1	536
	Semi-skilled .	64.4	28.1	7.6	100.1	331	43.9	42.9	13.2	100.0	189
	Service . . .	71.1	26.7	2.2	100.0	180	28.3	60.4	11.3	100.0	106
	Unskilled . .	51.9	38.3	9.9	100.1	162	22.7	54.8	22.6	100.1	84
	Farmer	50.6	35.7	13.7	100.0	255	17.9	55.9	26.2	100.0	193
Above Average	Professional .	53.7	34.5	11.7	99.9	2,262	27.3	44.0	28.8	100.1	2,373
	Prop/Mgr. . .	47.2	33.1	19.8	100.1	2,395	24.2	47.5	28.4	100.1	2,362
	Sales	44.7	41.1	14.2	100.0	674	22.1	52.9	25.0	100.0	560
	Clerical . . .	46.4	41.9	11.7	100.0	597	22.9	56.9	20.1	99.9	418
	Skilled . . .	41.5	45.1	13.5	100.1	1,720	25.7	54.4	19.9	100.0	1,191
	Semi-skilled .	38.6	49.7	11.7	100.0	878	20.2	60.2	19.5	99.9	503
	Service	41.1	43.4	15.5	100.0	399	25.1	56.4	18.5	100.0	230
	Unskilled . .	37.0	51.6	11.3	99.9	432	24.3	62.7	13.1	100.1	260
	Farmer	36.1	47.2	16.8	100.1	702	11.6	57.6	30.7	99.9	687
Bottom Half	Professional .	28.4	47.9	23.7	100.0	2,743	16.9	47.5	35.6	100.0	1,801
	Prop/Mgr. . .	23.9	42.9	33.1	99.9	3,531	15.4	46.3	38.3	100.0	1,716
	Sales	23.6	44.8	31.6	100.0	983	14.5	54.8	30.8	100.1	333
	Clerical . . .	21.7	51.5	26.8	100.0	761	18.5	48.4	33.1	100.0	399
	Skilled . . .	24.5	50.4	25.0	99.9	3,092	19.9	53.7	26.4	100.0	1,273
	Semi-skilled .	22.2	54.8	23.0	100.0	1,392	14.4	68.3	17.3	100.0	624
	Service . . .	22.3	54.4	23.3	100.0	566	17.2	50.6	32.2	100.0	287
	Unskilled . .	22.0	54.3	23.7	100.0	822	13.3	55.0	31.7	100.0	278
	Farmer	21.6	49.9	28.5	100.0	1,258	9.8	59.2	31.0	100.0	799

N = ...	51,476
NA, Parental Occupation only .	1,980
NA, A.P.I. only	702
NA, Plans only	2,240
NA, Two or more	180
Total Weighted N = ...	56,666

TABLE 6.19

SES AND SIZE OF HOMETOWN, BY PLANS AND REASONS FOR NOT GOING ON FOR ADVANCED STUDY

Background Variable	Plans				Total	
	Next Year	Later or Never				
		Motivational Reasons	Financial Obstacles		%	N
			Yes	No		
SES:						
High	36	49	8	6	99	24,605
Low	29	48	17	6	100	20,977
High - Low . . .	+ 7	+ 1	- 9	0		
Hometown:						
Larger	39	46	10	6	101	21,611
Smaller	28	52	15	6	101	23,971
Larger - Smaller	+11	- 6	- 5	0		

N = ... 45,582
NA, Background and Negro . . 8,083
NA, Plans 2,428
NA, Reasons No Go 571
Total Weighted N = ... 56,664

order SES effects in plans for next year appears as financial, not motivational.

It is not obvious why size of hometown during high school should affect graduates' plans for advanced study, but it does. (Table 6.19) Examining the detailed distribution on hometown, it is seen that there is a general increase in Next Year as size increases. (Table 6.20) Among those from cities of two million or more, 63 per cent planned to go on immediately, and there is a steady decline as one moves down the size groups to a figure of 21 per cent among rural. Within a size of central city group, however, there is no consistent difference between those from the central city and those from the suburbs. Thus, it appears that it is not the student's immediate neighborhood which is producing the difference, but the degree of metropolitanism of his general setting.

It has been long known that there are fairly sharp regional differences in educational attainment, and because the regions with lesser rates of school attainment are generally less urban, the possibility arises that the hometown difference is a spurious function of regional effects. The evidence is not clear, but this does not seem to be the case. The questionnaire did not ask the student to indicate his hometown region, but the sample can be classified on the region of their undergraduate institution. Because 78 per cent of the sample reported that their school was in the same state or within four hours' drive of their hometown (XSS), the correlation between region of hometown and region of undergraduate institution must be high. When Plans are cross tabulated by region and hometown (Table 6.21), it is seem that the two differences are independent. Within each region there is a difference by hometown, and within a hometown group there is a consistent regional difference, schools in the South being lower on Plans, schools in the Northeast being higher, and

TABLE 6.20

SIZE OF HOMETOWN AND PLANS INDEX

(Representative Sub-Sample)

Plans	Location Within Metropolitan Area	Size of Metropolitan Area				
		2 Million or More	500,000-1,999,999	100,000-499,999	Less than 100,000	Rural
Per cent Next Year	Central City	50 (290)	36 (161)	32 (236)	27 (697)	-
	Suburb	41 (314)	37 (279)	34 (236)	30 (275)	
	Rural	-	-	-	-	21 (678)
	Total	45 (604)	37 (440)	33 (472)	27 (972)	21 (678)
Per cent Later	Central City	38 (290)	46 (161)	40 (236)	48 (697)	-
	Suburb	39 (314)	38 (279)	40 (236)	47 (275)	-
	Rural	-	-	-	-	53 (678)
	Total	39 (604)	41 (440)	40 (472)	48 (972)	53 (678)
Per cent Never	Central City	12 (290)	18 (161)	28 (236)	25 (697)	-
	Suburb	20 (314)	25 (279)	26 (236)	23 (275)	-
	Rural	-	-	-	-	26 (678)
	Total	16 (604)	22 (440)	27 (472)	25 (972)	26 (678)

N = ... 3,166
NA Hometown 90
NA Plans 141
Total N = ... 3,397

TABLE 6.21

HOMETOWN BY REGION OF UNDERGRADUATE INSTITUTION AND PLANS INDEX

(Per cent "Next Year")

Hometown	Region of Undergraduate Institution			
	New England, Middle Atlantic	North Central	Mountain, Pacific	South, South Central
Larger	43 (679)	36 (456)	36 (209)	28 (172)
Smaller	29 (448)	27 (470)	26 (274)	18 (464)
N = ...	1,127	926	483	636
Per cent Larger	60	49	43	27
Per cent Next Year . . .	37	31	31	21

N = ...	3,166
NA Plans only	141
NA Hometown only . . .	88
NA Both	2
Total N	3,397

with North Central and West being intermediate. At the extremes, 18 per cent of the smaller city students from Southern schools plan immediate advanced study, in comparison with 43 per cent of the larger city students from the Northeast.

Considering the figures for the dichotomy, larger versus smaller hometown (Table 6.13), it is seen that 39 per cent of those from larger cities are going on immediately as compared with 28 per cent of those from smaller cities, the 11 per cent difference coming from a six per cent difference in motivation and a five per cent difference in external financial obstacles, students from smaller towns appearing a little less motivated and a little more often seeing themselves as facing financial barriers.

When SES and hometown are cross tabulated against Plans and Reasons, controlling for sex, API, and career type, a large number of cells are generated. (Table 6.22) Even though there are too few women aiming for careers in Law and Medicine to justify tabulations, the table shows 20 possible comparisons for each characteristic. By and large, both SES and hometown affect Plans, independent of sex, API, and career type. In 18 out of 20 comparisons, the student from a larger city more often says "Next Year." The SES effect is much less consistent, higher SES students being more often Next Year in only 13 out of 20 comparisons.

With tables of such a degree of complexity, it is often easier to interpret the findings by considering a "difference table" in which the entries are percentage differences for the various categories rather than the original percentage table. [Tables 6.22 b), 6.22 c)]

Taking, for example, the hometown effect, Table 6.22 b) tells us that among high SES, high API males aiming for Arts and Science careers, 80 per cent of those from larger cities are classified as Next Year, as are 77 per cent of otherwise

TABLE 6.32

SES AND SIZE OF HOMETOWN BY PLANS FOR ADVANCED STUDY AND REASONS FOR NOT GOING ON FOR ADVANCED STUDY, CONTROLLING SEX, A.P.I. AND CAREER TYPE

(Per cent "Next Year")

a) SES, Hometown, Sex, A.P.I., Career Type and Plans

Future Career	A.P.I.	SES	Sex: Male, Hometown: Larger	Male, Hometown: Smaller	Female, Hometown: Larger	Female, Hometown: Smaller
Law, Medicine	High	High	92 (1,038)	91 (320)	– (43)	– (31)
		Low	92 (233)	76 (268)	– (31)	– (23)
	Low	High	74 (316)	76 (307)	– (9)	– (22)
		Low	68 (133)	52 (137)	– (8)	– (8)
Arts and Sciences	High	High	80 (966)	77 (631)	67 (1,016)	37 (603)
		Low	71 (637)	62 (673)	67 (333)	50 (363)
	Low	High	33 (363)	39 (366)	26 (260)	13 (138)
		Low	41 (337)	23 (608)	30 (90)	19 (138)
Other	High	High	46 (2,264)	40 (1,782)	29 (2,710)	21 (2,471)
		Low	42 (1,706)	34 (2,333)	28 (1,141)	18 (2,003)
	Low	High	21 (2,133)	18 (2,139)	18 (1,214)	12 (1,372)
		Low	25 (2,048)	17 (3,654)	20 (861)	10 (1,690)

N =	42,065
NA Career Field	2,060
NA A.P.I.	393
NA Background or Negro	7,249
NA One or More	896
NA Plans	2,428
NA Reasons No Go	571
Total Weighted N =	56,664

TABLE 6.22--Continued

b) Difference Table: Hometown (Larger - Smaller)*

Career	SES	A.P.I.	Sex							
			Male				Female			
			Plans				Plans			
			Next Year	Later or Never			Next Year	Later or Never		
				Motivational	Financial	Other		Motivational	Financial	Other
Law, Medicine	High	High	+ 1	0	- 2	- 1	Insufficient Cases To Tabulate			
		Low	- 2	- 2	- 1	+ 5				
	Low	High	+16	- 1	-14	- 1				
		Low	+15	+ 2	- 6	-11				
Arts and Sciences	High	High	+ 3	- 1	- 1	- 1	+10	-10	- 2	+ 2
		Low	+14	- 4	-12	+ 2	+11	- 3	- 6	- 2
	Low	High	+ 9	- 2	- 8	+ 1	- 3	- 3	+ 2	+ 4
		Low	+15	- 4	-13	0	+11	- 6	- 2	- 3
Other	High	High	+ 4	- 1	0	- 2	+ 8	- 8	- 2	0
		Low	+ 3	- 4	+ 1	- 1	+ 6	- 6	0	- 1
	Low	High	+ 8	- 4	- 3	- 1	+10	- 4	- 5	- 1
		Low	+ 9	- 2	- 9	+ 1	+10	- 6	- 5	+ 1

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*Cell entry = per cent for larger hometown minus per cent for smaller hometown. Rows do not always sum to zero because of rounding.

TABLE 6.22--Continued

c) Difference Table: SES (High - Low)*

Career	Hometown	A.F.T.	Sex							
			Male				Female			
			Plans				Plans			
			Next Year	Later or Never			Next Year	Later or Never		
				Motivational	Financial	Other		Motivational	Financial	Other
Law, Medicine	Larger	High	0	0	- 2	+ 1	Insufficient Cases To Tabulate			
		Low	+ 6	- 3	-12	+ 9				
	Smaller	High	+13	- 1	-14	+ 1				
		Low	+24	+ 1	-17	- 7				
Arts and Sciences	Larger	High	+ 9	- 4	- 4	0	0	+ 7	- 3	- 2
		Low	+12	- 2	-10	+ 1	- 6	+ 2	+ 1	+ 4
	Smaller	High	+13	- 3	-11	+ 2	-13	+12	+ 1	0
		Low	+16	- 4	-11	- 1	- 6	0	+ 5	+ 1
Other	Larger	High	+ 2	+ 3	- 7	+ 3	+ 1	+ 2	- 3	+ 1
		Low	- 5	+ 5	- 2	+ 3	- 2	+ 4	- 3	0
	Smaller	High	+ 6	0	-10	+ 4	+ 3	+ 6	- 8	0
		Low	+ 1	+ 6	-12	+ 5	+ 2	+ 4	- 8	+ 2

*Cell entry = per cent for high SES minus per cent for low SES. Rows do not always add to zero because of rounding.

similar students from smaller cities. Subtracting 77 from 80 we can say that the percentage difference for hometown in this group is +3, which is the entry for that cell in Table 6.22 b). Because there are outcomes considered...1) Going on Next Year, 2) Not going on and citing a motivational reason, 3) Not going on, not citing a motivational reason but citing financial obstacles, and 4) Not going on, and not citing motivational or financial reasons...except for rounding, the differences for each of these four outcomes should sum to zero (if a certain group is more likely to have a given outcome, then they must be that much less likely to have other outcomes), so in a sense we can read off in the three reasons columns the explanation for the difference in the Next Year column. Consider, as an example, the entries in Table 6.22 b) for hometown differences among low SES, high APT men in Law and Medicine. The figures are as below:

Next Year	Motivational	Financial	Other	Total
	- 1	-14	- 1	
+16		-16		0

The interpretation is: Among this group, the students from larger cities are more likely to go on Next Year, their percentage advantage being 16 per cent. Necessarily, the three possible reasons must total -16 (in some cases rounding prevents a perfect zero total). It is seen, however, that for external financial obstacles the entry is -14 and for the other two the entries are -1. If the hometown difference in finances is removed (i.e., the surplus of Financial Obstacles in low SES compared with high SES were shifted to "Next Year"), the hometown difference in Next Year would drop from 16 to two. In this sense, we can say that financial factors are the major part of the home difference within this group.

With these ideas in mind, let us scan Table 6.22 b). As stated previously, all but two of the Next Year differences are positive, students from larger cities being more likely to plan immediate advanced study except among high API, low SES women in Arts and Sciences and low API, high SES men in Law and Medicine. Running down the motivational column, negative entries appear in 18 out of 20 comparisons, and running down the financial column, negative relationships appear in 16 out of 20 comparisons. The final column which is indicative of external, non-financial obstacles has no consistent pattern.

We may draw the following conclusion:

Controlling for sex, API, SES, and career type, the student from smaller towns is generally less likely to anticipate immediate graduate or professional study because of both lower motivation and perceived external financial barriers.

Applying a similar analysis to SES leads to less clear-cut results, the SES effects being less consistent. To begin with, among women, positive and negative signs appear equally in each column. Hence, SES apparently has no consistent effect on women's plans for advanced study. Among men, the entries for Next Year are positive in 10 out of 12 comparisons, hence, for males, but not females, high SES is associated with plans for immediate study, independent of API, career, and hometown.

Turning to the reasons columns of Table 6.22 c), generally negative entries appear for financial reasons, all 12 entries being negative for men, five out of eight being negative among the women. For motivation, it is hard to draw a conclusion. Among women higher SES apparently goes with lower motivation, all the entries for women's comparisons being positive. Among men, the signs scatter. In the next section, however, it will be shown that when religion is also controlled, the over-all net effect of SES on motivation is negative. The difference is slight, but the tendency is for the independent effect of SES to be reduced motivation when all other factors are controlled.

Because of the importance from the viewpoint of social policy of findings on SES, calculations were made of the relationship between SES and plans for detailed occupational breakdowns in order to determine whether some careers appeared to show greater or lesser SES barriers to immediate study. (Table 6.23) Among women, as expected, the results are inconsistent, but among men there is only one exception among cases with 50 or more weighted cases in each SES group. The single exception is high API men in Medicine where 100 per cent of the 111 low SES cases and 96 per cent of the 415 high SES cases planned immediate study. It is possible that the percentage differences are higher in Social Sciences than other careers, but no other patterns of differential effect appear. The indirect suggestion of these negative findings is that the SES effect has little to do with stipends, for stipend availability ranges widely with career fields, but the SES differences do not.

While SES has no consistent effect among women, among male students higher SES is generally associated with immediate advanced study, lower SES is associated with perceived financial obstacles, and there is no consistent SES difference in motivational reasons.

The results for SES have an obvious interpretation--that the student from less affluent background probably has less in savings, greater debts, and less expectation of help from home, and so he sees greater financial obstacles. Why the same argument should not apply to women is not known.

The results for hometown, actually the more powerful predictor, are less obvious. The Financial Obstacles difference by city size makes some sense if we assume that a

TABLE 6.23

SES AND PLANS INDEX, CONTROLLING FOR GRADUATE FIELD, SEX, AND A.P.I.

a) Q Correlations Between "High SES" and "Going Next Year"

Graduate Field	Per Cent High SES	Male			Female		
		A.P.I.			A.P.I.		
		Top Fifth	Above Average	Bottom Half	Top Fifth	Above Average	Bottom Half
Law	70.2	+ .33	+ .30	+ .34	- .24	- .65	+ .11
Medicine	69.7	-1.00	+ .05	+ .19	- .80	+ .61	+1.00
Humanities	60.1	+ .15	+ .21	+ .14	+ .06	+ .03	- .06
Social Science . .	57.8	+ .38	+ .26	+ .38	- .24	- .09	- .19
Social Work	54.8	*	- .47	- .44	+ .23	+ .35	+ .01
Business	54.2	+ .17	+ .18	+ .11	+ .88	+ .45	+ .31
Other Health . . .	49.2	+ .30	+ .48	+ .37	- .02	+ .35	+ .44
Biological Science.	47.2	+ .08	+ .22	+ .39	+ .12	- .13	+ .59
Physical Science .	47.2	+ .26	+ .18	+ .11	- .18	.00	+ .56
Engineering	45.6	+ .32	+ .18	+ .01	*	*	*
Other Profession .	45.5	- .30	+ .33	- .19	+ .18	- .01	+ .59
Education	43.2	+ .34	+ .09	.00	+ .27	+ .14	+ .03

*Number of cases insufficient to support correlation.

TABLE 6.23--Continued

b) Per Cent Going Next Year

Graduate Field	SES	Male						Female					
		A.P.I.						A.P.I.					
		Top Fifth		Above Average		Bottom Half		Top Fifth		Above Average		Bottom Half	
Law	High	85.5	(427)	77.4	(558)	61.4	(562)	-	(20)	-	(39)	-	(14)
	Low	74.7	(91)	64.7	(224)	43.6	(346)	-	(4)	-	(11)	-	(8)
Medicine .	High	96.4	(415)	92.2	(359)	70.4	(125)	-	(17)	-	(27)	-	(20)
	Low	100.0	(111)	91.5	(176)	61.9	(63)	-	(23)	-	(30)	-	(8)
Humanities	High	77.8	(361)	57.7	(362)	6.7	(264)	56.2	(698)	37.0	(692)	26.1	(349)
	Low	72.3	(224)	47.3	(347)	30.5	(387)	53.1	(258)	35.5	(330)	28.4	(243)
Soc. Science	High	81.1	(244)	62.3	(321)	42.4	(278)	46.9	(213)	40.4	(213)	23.5	(98)
	Low	65.7	(140)	49.3	(221)	25.1	(331)	58.9	(95)	44.6	(130)	31.0	(71)
Social Work	High	-	(4)	-	(14)	-	(35)	33.8	(65)	44.4	(169)	14.3	(91)
	Low	-	(9)	-	(33)	47.2	(53)	-	(33)	27.9	(68)	14.0	(107)
Business .	High	52.3	(308)	38.2	(798)	21.6	(1,011)	-	(49)	38.7	(93)	44.6	(65)
	Low	44.0	(207)	29.9	(675)	18.1	(952)	-	(16)	-	(36)	30.0	(70)
Other Health	High	-	(17)	85.2	(54)	77.0	(126)	32.8	(61)	37.9	(182)	57.1	(77)
	Low	-	(11)	66.7	(66)	60.7	(122)	33.9	(62)	22.9	(153)	34.3	(108)
Bio. Science	High	-	(45)	74.4	(125)	64.0	(172)	53.3	(122)	42.6	(136)	44.6	(65)
	Low	82.1	(56)	64.8	(125)	43.5	(193)	-	(44)	49.4	(79)	17.0	(88)
Phy. Science	High	88.1	(388)	65.9	(343)	36.3	(314)	51.4	(140)	39.8	(93)	-	(40)
	Low	81.5	(286)	57.5	(412)	31.2	(497)	60.5	(76)	39.8	(128)	11.9	(59)
Engineering	High	78.1	(384)	49.2	(472)	27.3	(461)	-	(1)	-	(4)	-	(4)
	Low	67.8	(326)	40.3	(596)	27.0	(641)	-	(2)	-	(9)	-	(1)
Other Prof.	High	68.6	(169)	71.4	(301)	43.6	(397)	59.6	(104)	32.8	(189)	34.8	(158)
	Low	82.3	(142)	55.6	(365)	53.0	(628)	50.5	(93)	33.1	(145)	12.2	(197)
Education .	High	63.4	(131)	45.9	(381)	27.1	(627)	39.8	(763)	29.7	(1,669)	22.4	(1,147)
	Low	45.8	(168)	41.6	(817)	26.9	(1,675)	26.2	(462)	24.3	(1,446)	21.5	(1,598)

N = ...	37,247
NA A.P.I. only	526
NA Graduate Field only	1,954
NA SES only	1,913
NA Two or more	213
Excluded: Not going to graduate school	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

considerable proportion of the students expect to return home. The smaller the city, the less likely there is to be a graduate school which one could attend while working and living at home. Students from smaller communities who want to go on for advanced study undoubtedly more often have to move and seek out new employment, an obstacle which would appear to them as a financial barrier. The motivational difference by city size is a little more puzzling. Perhaps the reason lies in the colleges attended by the small town student, perhaps he has known fewer people who went on because there are fewer people in smaller cities who have been to graduate school, or perhaps it comes from the general aura of sophistication which seems to differentiate the students from large metropolises.

We wish to remain conservative and to stress that the effects of hometown and SES are much less striking for postgraduate study than they are for the decision to attend college. At the same time, the differences are not negligible, particularly when the two characteristics are treated together. Considering high API men aiming for Arts and Science careers, the particularly strategic and problematical group who have received special attention throughout, 80 per cent of those from high SES, larger city origins expected immediate graduate study, in contrast with 62 per cent of those from smaller cities and low SES families. [Table 6.22 a)]

Religion

As in the case of career field, the relationship between religion and plans for advanced study is of considerable interest because of the number of writers and researchers who have claimed that the "Protestant Ethic" or "Jews' high evaluation of learning" affect career and educational choices.

There is a distinct zero order difference among religions in plans for advanced study. (Table 6.24) Forty-five

TABLE 6.24

RELIGIOUS PREFERENCE AND PLANS INDEX

(Representative Sub-Sample)

Current Religious Preference	Plans			Total	
	Next Year	Later	Never	Per cent	N
Jewish	45	38	17	100	219
None	44	42	14	100	349
Other . . . . :	40	44	17	101	126
Catholic	37	39	24	100	787
Protestant	26	48	26	100	1,686

N = ... 3,167
NA on Religion . . 87
NA on Plans 143

Total N = ... 3,397

per cent of the Jews, 37 per cent of the Catholics, and 26 per cent of the Protestants reported plans for study in Fall, 1961. (RSS) The high rates for Jews are consistent with other research, although the fact that Catholics outdo Protestants is less easy to square with current stereotypes.[6]

Examining the relationships with plans and reasons categories, using original religion instead of current religion gives similar results. [Table 6.25 a)] Compared with Catholics, Jews show an 18 per cent advantage in immediate plans, an 11 per cent deficit in low motivation, a five per cent deficit in financial obstacles, and a two per cent deficit in other external obstacles. Compared with white Protestants, Catholics show a six per cent advantage in Next Year, most of which comes from a six per cent deficit in motivation.

Religion being intimately inter-twined with API, career choice, SES, and hometown, it is necessary to control all of these variables to tease out any genuinely "religious" differences, in contrast with differences which appear because of social factors associated with religion. The upshot is a percentage table with 480 cells, which will not be presented. In order to examine the religious data, it will be more useful to consider a series of difference tables in which religious differences in Plans and Reasons are shown for various sex, API, career, SES, and hometown groups.

Table 6.25 b) gives the Jewish-Catholic differences for all cells in the master table where there was a weighted

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[6] As noted previously, Andrew Greeley of NORC is conducting an extensive analysis of religious differences, his more detailed tabulations which will be reported elsewhere tending to support the general line of conclusions here.

TABLE 6.25

ORIGINAL RELIGION, PLANS FOR ADVANCED STUDY AND REASONS FOR NOT GOING ON FOR ADVANCED STUDY

a) All Variables

Religion	Plans				Total	
	Next Year	Later or Never			Per cent	N
		Motivational Reasons	Financial Obstacles			
			Yes	No		
Jewish	53	35	7	5	100	4,026
Catholic	35	46	12	7	100	12,514
Protestant	29	52	13	6	100	29,042
Difference						
Jewish - Catholic. .	+18	-11	- 5	- 2	0	
Catholic - Protestant	+ 6	- 6	- 1	+ 1	0	
Jewish - Protestant.	+24	-17	- 6	- 1	0	

N = ...	45,582
NA Background and Negro .	8,083
NA Plans	2,428
NA Reasons No Go	571
Total Weighted N = . . .	56,664

TABLE 6.25--Continued

b) Difference Table: (Jewish minus Catholic)

Career	A.P.I.	Sex							
		Male				Female			
		Hometown				Hometown			
		Larger		Smaller		Larger		Smaller	
		SES		SES		SES		SES	
		High	Low	High	Low	High	Low	High	Low
I) Next Year									
Medicine, Law . .	High	+ 6	+ 1	- 1	*	Insufficient Cases To Tabulate			
	Low	+23	*	*	*				
Arts and Sciences	High	+ 8	+14	*	*	- 8	+37	*	*
	Low	*	+36	*	*	*	*	*	*
Other	High	+ 9	+11	*	*	0	+16	+10	*
	Low	+10	+18	+ 4	*	+12	+12	*	*
II) Motivational Reason									
Medicine, Law . .	High	- 1	0	+ 1	*	Insufficient Cases To Tabulate			
	Low	+ 1	*	*	*				
Arts and Sciences	High	- 2	- 8	*	*	+ 7	-28	*	*
	Low	*	-11	*	*	*	*	*	*
Other	High	+ 1	- 5	*	*	- 2	-13	-20	*
	Low	- 3	-10	+ 6	*	-15	- 1	*	*
III) Financial Obstacles									
Medicine, Law . .	High	0	- 3	+ 3	*	Insufficient Cases To Tabulate			
	Low	- 5	*	*	*				
Arts and Sciences	High	- 2	- 5	*	*	+ 1	-17	*	*
	Low	*	-12	*	*	*	*	*	*
Other	High	- 5	- 7	*	*	+ 4	- 3	+ 9	*
	Low	- 7	- 8	- 1	*	+ 5	- 8	*	*

*Insufficient cases to tabulate.

TABLE 6.25--Continued

c) Difference Table: (Catholic minus Protestant)

Career	A.P.I.	Sex							
		Male				Female			
		Hometown				Hometown			
		Larger		Smaller		Larger		Smaller	
		SES		SES		SES		SES	
		High	Low	High	Low	High	Low	High	Low
I) Next Year									
Medicine, Law . .	High	0	+ 1	+ 5	-17	Insufficient Cases To Tabulate			
	Low	-13	*	+ 9	+15				
Arts and Sciences	High	- 3	+ 4	- 3	+ 5	+ 3	- 7	+17	+17
	Low	- 4	0	+15	+13	- 1	*	*	*
Other	High	+ 3	-10	+ 1	+ 6	+14	+ 2	+ 1	+ 7
	Low	+ 5	- 7	+ 2	+ 1	+ 8	+ 6	+ 7	+ 9
II) Motivational Reason									
Medicine, Law . .	High	- 1	+ 1	- 3	+ 6	Insufficient Cases To Tabulate			
	Low	- 2	*	+ 2	+ 3				
Arts and Sciences	High	+ 5	+ 1	- 9	+ 2	- 4	- 1	- 4	-11
	Low	-13	+10	- 7	- 7	- 4	*	*	*
Other	High	- 7	+ 9	- 4	- 5	-15	- 5	+ 4	+ 4
	Low	- 9	+ 4	- 5	- 5	-12	-14	- 2	- 3
III) Financial Obstacles									
Medicine, Law . .	High	+ 1	- 3	+ 1	+10	Insufficient Cases To Tabulate			
	Low	+ 4	*	- 6	- 7				
Arts and Sciences	High	- 2	- 2	+ 5	- 6	0	+14	-12	- 6
	Low	+13	-19	-16	+ 3	+ 3	*	*	*
Other	High	+ 1	+ 1	+ 3	- 2	0	+ 3	- 5	-10
	Low	+ 1	0	- 2	+ 4	+ 4	+ 8	- 2	- 9

TABLE 6.25--Continued

d) Difference Table: (Jewish minus Protestant)

Career	A.P.I.	Sex							
		Male				Female			
		Hometown				Hometown			
		Larger		Smaller		Larger		Smaller	
		SES		SES		SES		SES	
		High	Low	High	Low	High	Low	High	Low
I) Next Year									
Medicine, Law . .	High	+ 6	+ 2	+ 4	*	Insufficient Cases To Tabulate			
	Low	+10	*	*	*				
Arts and Sciences	High	+ 5	+18	*	*	- 5	+30	*	*
	Low	*	+36	*	*	*	*	*	*
Other	High	+12	+ 1	*	*	+14	+18	+11	*
	Low	+15	+11	+ 5	*	+20	+18	*	*
II) Motivational Reason									
Medicine, Law . .	High	- 2	+ 1	- 2	*	Insufficient Cases To Tabulate			
	Low	- 1	*	*	*				
Arts and Sciences	High	+ 3	- 7	*	*	+ 3	-29	*	*
	Low	*	- 1	*	*	*	*	*	*
Other	High	- 6	+ 4	*	*	-17	-18	-16	*
	Low	-12	- 6	+ 1	*	-27	-15	*	*
III) Financial Obstacles									
Medicine, Law . .	High	+ 1	- 6	+ 4	*	Insufficient Cases To Tabulate			
	Low	- 1	*	*	*				
Arts and Sciences	High	- 4	- 7	*	*	+ 1	- 3	*	*
	Low	*	- 3	*	*	*	*	*	*
Other	High	- 4	- 6	*	*	- 4	0	+ 4	*
	Low	- 6	- 8	- 3	*	+ 9	- 2	*	*

total of 50 or more in each religious origin group.[7] Our conclusions are:

> a) The Jewish-Catholic difference in Plans is not a spurious effect of API, career type, SES, sex, or hometown. In 16 out of 19 possible comparisons, Jews are higher on Next Year, when the other factors are controlled simultaneously.
>
> b) Both motivation and perceived financial obstacles are related to the difference, Jews being less likely to be lower in motivation in 13 out of 19 comparisons, less likely to claim financial obstacles in 13 out of 19 comparisons. Neither type of reason is entirely consistent and both appear about as strong, so the difference cannot be attributed to motivation along or finances alone.
>
> c) The same conclusions apply with even greater consistency when Jews are compared with Protestants [Table 6.25 d)], Jews being higher on Next Year in 18 comparisons, lower on low motivation in 14, and lower on financial obstacles in 13 out of a possible 19 comparisons.

When, however, the Protestant-Catholic difference is analyzed [Table 6.25 c)], it tends to thin out. Of 36 possible comparisons, there is a Catholic advantage in Next Year for 25 comparisons, a Protestant advantage for nine comparisons and no difference in two comparisons. Closer inspection suggests a possible interaction with sex, the Catholic-Protestant difference obtaining in 11 out of 13 comparisons for women, but only 14 out of 23 comparisons among men.

The methodology of evaluating complex percentage tables is not well developed (partly, of course, because so few chances arise to work with tables with sufficient cases in several hundred cells), and it is hard to draw conclusions on narrowly statistical grounds. It is unrealistic to require that a difference obtain in every single comparison in such tables, for as the number of comparisons increases, the size of the difference is subject to random fluctuation, and sometimes one will observe no difference just as one will occasionally sample Republicans in Deep South precincts. In addition, the case bases vary considerably.

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[7] We have used the conservative number of 50 as a minimum cell size for data based on TWS tabulations, because the clustering of the sample and the weighting of cards means that the "true" N's are considerably smaller than the N's in the tables. For RSS data, where there are no duplicated cases, we have set 10 as a minimum, although cells with 10 cases are hardly highly reliable.

The technique of "weighted net percentage differences" explained in Chapter IV has been used to avoid some of these problems. The results are as follows:

a) Jewish minus Catholic Percentage Difference

	Next Year	Motivational	Financial Obstacles
Zero Order	18	-11	- 5
Net Weighted	10	- 5	- 6
	b) Catholic minus Protestant		
Zero Order	6	- 6	- 1
Net Weighted	3	- 3	- 1

While both differences in Next Year are reduced when other factors are controlled (which implies that roughly half of the religious differences in Next Year stem from religious differences in career, sex, API, SES and hometown), the Jewish Catholic difference is 10 per cent, while the Catholic Protestant difference is three. Similar reductions are seen for motivation and financial obstacles.

From courses in statistics, we are used to thinking of differences in either/or terms. In this situation, however, the variation appears to be one of degree. The Jewish advantage in Plans appears to be a relatively strong one, turning up in most of the comparisons and producing a net weighted difference of 10. The Catholic-Protestant one cannot be said to be spurious, for it does appear in a majority of the comparisons and produced a net weighted difference of three. The Catholic-Protestant difference, however, is so small that it cannot be considered a major factor.

In summary:

a) For the total sample and when compared with Protestant and Catholic Whites matched in career type, sex, SES, hometown, and API, the Jewish students tend to be more likely to plan immediate advanced study, and less likely to cite motivational or financial reasons. A considerable proportion of their zero order difference, however, stems from the fact that Jews are high on API, high on SES, from larger cities, and over-choose occupations with high rates of intention for immediate graduate study.

b) For the total sample, Catholics are more likely to plan immediate advanced study than Protestants, but when other predictors are controlled, the difference is diminished considerably. If anything, Catholics have "greater aspirations" than Protestants, but the difference is slight.

Putting It All Together

In different ways and to different degrees students who differ in sex, academic performance, SES, race, hometown, and religion vary in their plans for postgraduate study, even though they may be intending to enter careers where postgraduate work is equally advantageous. Having considered how each of these factors makes an independent contribution to Plans and Reasons, we can now analyze their simultaneous effect.

The simplest summary is in the form of the weighted net percentages. Listed below are the results for differences in the per cent of students who plan to begin study Next Year.

Weighted Net Percentage Difference in "Next Year"

Item	Comparison	Zero Order	Weighted Net
API . . .	High minus low	+20	+18
Sex . . .	Male minus female	+15	+14
Race . .	Negro minus low SES, smaller city, Protestant Whites . . .	- 3	+11
Religion.	Jewish minus Catholic	+18	+10
Hometown.	Larger minus smaller.	+11	+ 6
Religion.	Catholic minus Protestant . . .	+ 6	+ 3
SES . . .	High minus low	+ 7	+ 2

Sex and API are the strongest differences, outweighing the effects of the social characteristics considerably. Among the social factors, race, being Jewish, and hometown appear to be the stronger, while SES and Catholic-Protestant differences are quite slight in the net effects. It is also interesting to note that the race difference reverses in the net figures. While over-all, Negroes are less likely to expect to go on immediately, when compared with the low attending Protestant, low SES, small town Whites, Negro rates are considerably higher, and social characteristics of Negroes apparently providing a considerable impediment to their plans.

Turning now to motivation, differences in the per cent who are Later and Never and who circled "Want to get practical experience first" or one of the low interest items:

Weighted Net Percentage Differences in Motivation

Item	Comparison	Zero Order	Weighted Net
Race . .	Negro minus Protestant, low SES, smaller city Whites. . .	-18	-26
Sex . . .	Male minus female	-24	-22
API . . .	High minus low	-11	-10
Religion.	Jewish minus Catholic	-11	- 5
Religion.	Catholic minus Protestant . . .	- 6	- 3
SES . . .	High minus low	+ 1	+ 3
Hometown.	Larger minus smaller	- 6	- 2

The race difference is the strongest in the set, and it along with sex and API are the only three factors whose net differences amount to 10 per cent or more. The fact that Negroes, especially, and to some extent Jews, Catholics, and low SES students are higher on motivation, is suggestive of a theme--that one of the problems of recruitment to graduate study is that, by and large, the strongest motivation is among the upwardly mobile and the minority group members who perhaps see in the certification of advanced study routes to success and protection against discrimination. At the same time, the minority student often is less able to implement his desires because of handicaps such as lower academic performance or lower SES. Jews and Negroes provide an interesting contrast from this point of view. Both have very high motivation for graduate school, but the Jews are able to implement their motivations with very high rates of anticipated immediate study because they also have high API, high SES, and urban backgrounds on their side. The Negro student, whose motivation, if anything, is even higher than the Jew's, has all these same factors working against him and his zero order rates are lower than Whites.

As for perceived financial obstacles or differences in the per cent who are Later or Never on Plans and who do not mention any of the motivational items but circle "Financial obstacles,":

Weighted Net Percentage Differences in Financial Obstacles

Item	Comparison	Zero Order	Weighted Net
Race . .	Negro minus White, Protestant, low SES, smaller city	+22	+15
SES . . .	High minus low	- 9	- 6
Religion.	Jewish minus Catholic	- 5	- 6
Sex . . .	Male minus female	- 9	- 3
Hometown.	Larger minus smaller.	- 5	- 2
API . . .	High minus low	- 4	- 1
Religion.	Catholic minus Protestant . . .	- 1	- 1

Except for the race difference of 15, all the weighted net differences are small, even SES making only a six per cent difference. With the advantage of hindsight, however, these results appear reasonable. After all, for a single young person it would be rare for existing financial burdens to really prohibit advanced study. At the worst, one could borrow money and, except in Law and Medicine, the bulk of graduate students in the United States work their way through. Thus, we expect in general that the financial obstacles to graduate study are not like financial obstacles to owning a Rolls Royce, but rather are financial and motivational reasons combined, the students claiming financial obstacles really "meaning" to say, "The financial costs are not actually prohibitive, but they are so high that graduate study is not worth that much to me right now." Thus, the fact that Jews report fewer financial obstacles than Catholics when matched on SES and city size suggests, not that Jews have mysterious sources of money, but that graduate study appears a greater bargain to them than to Catholics.

We have not been able to include the small group of high API men with children in these tabulations, but had it been possible to do so, our guess is that it would turn out that these young men face genuine and difficult financial obstances; but for the remainder of students our guess is *that purely financial problems are rare and that it is more* realistic to think of Plans as a function of the ratio between motivation and financial resources rather than a function of one or the other.

Reviewing the same figures from a different perspective, we can see the differential effects of each variable:

Weighted Net Differences by Characteristics
(Difference for Other External Obstacles Estimated
by Subtraction)

1) API (High minus low)

Next Year	+18
Motivational	-10
Other External	- 7
Financial	- 1

2) Sex (Male minus female)

Next Year	+15
Motivational	-22
Other External	+ 4
Financial	+ 3

3) Race (Negro minus White, Protestant, Low SES, Smaller City)

Next Year	+11
Motivational	-26
Financial	+15
Other External	0

4) Religion (Jewish minus Catholic)

Next Year	+10
Financial	- 6
Motivational	- 5
Other External	+ 1

5) Hometown (Larger minus smaller)

Next Year	+ 6
Financial	- 2
Motivational	- 2
Other External	- 2

6) Religion (Catholic minus Protestant)

Next Year	+ 3
Motivational	- 3
Financial	- 1
Other External	+ 1

7) SES (High minus low)

Next Year	+ 2
Financial	- 6
Motivational	+ 3
Other External	- 1

Actually, no calculations were made of the net effects for Other External Obstacles, but since net weighted differences must sum to zero, they can be estimated by subtraction. When this is done, we can draw the following conclusions about our items beginning with the one producing the most difference and moving on to the less powerful ones.

1) The effect of API is mostly motivation and external obstacles (perceived low grades?), the API difference in financial obstacles being very small, despite sharp differences with API in stipend awards.

2) The sex difference is primarily motivational, although men do see greater financial and external (military?) obstacles than women.

3) The race difference, as we have seen, consists of a much greater motivation and greater financial obstacles for Negroes.

4) Religion and hometown effects come equally from small motivational and small financial obstacle differences.

5) The slight SES difference is a diluted form of the race difference, the low status students being higher in motivation, but also more likely to report financial obstacles. Previous evidence suggests that this is more true of women than among men.

A different, but perhaps equally useful fashion for reviewing the combined effects of these factors is by means of prediction tables in which percentages with various Plans and Reasons are tabulated for particular subgroups. We shall examine tables for Law and Medicine and for Arts and Sciences.

Table 6.26 is the prediction table for Law and Medicine. Because their differences are small, hometown and SES are combined into a summary index, the High's being high SES students from larger cities; the Low's being low SES students from smaller cities; the larger city, low SES, and smaller city, high SES groups being combined as intermediate on the Index. As the Protestant-Catholic differences are slight and inconsistent among men, the religious comparison is limited to Jews and Christians. Women are grouped by API only.

Among the major professions plans for Next Year are seen to be high regardless of the subgroup, but the personal characteristics produce definite differences. At the extremes, 96 per cent of the high API, high SES, larger city Jewish men anticipate immediate study, in contrast with 75 per cent among low SES, smaller city, high API Protestants and Catholics, and 52 per cent among low API, low SES, smaller city Protestants and Catholics. As expected, the percentages for motivation are very small, and there are no important trends. The big differences come from Financial Obstacles, which are associated with API and the city-SES index. Less than one per cent of the high API students give this explanation, in contrast with 16 per cent among the high API, low SES, small city Christians,

TABLE 6.26

PLANS FOR ADVANCED STUDY AND REASONS FOR NOT GOING ON FOR ADVANCED STUDY AMONG STUDENTS NAMING LAW AND MEDICINE AS FUTURE CAREER

a) Per cent Next Year

A.P.I.	SES	Hometown	Men			All Women
			Negro	White		
				Protestant-Catholic	Jewish	
High	High	Larger		90 (676)	96 (362)	70 (167)
	Other			90 (642)	93 (142)	
	Low	Smaller	- (32)	75 (244)	- (4)	
Low	High	Larger		68 (227)	87 (89)	42 (55)
	Other			72 (311)	- (31)	
	Low	Smaller	- (23)	52 (153)	- (4)	

b) Per cent Motivational Reasons

A.P.I.	SES	Hometown	Men			All Women
			Negro	White		
				Protestant-Catholic	Jewish	
High	High	Larger		4 (676)	2 (362)	11 (167)
	Other			3 (642)	3 (142)	
	Low	Smaller	- (32)	4 (244)	- (4)	
Low	High	Larger		4 (227)	4 (89)	38 (55)
	Other			7 (311)	- (31)	
	Low	Smaller	- (23)	5 (153)	- (4)	

TABLE 6.26--Continued

c) Per cent Financial Reasons

A.P.I.	SES	Hometown	Men			All Women
			Negro	White		
				Protestant-Catholic	Jewish	
High	High	Larger		0 (676)	1 (362)	
	Other			2 (642)	2 (142)	16 (167)
	Low	Smaller	- (32)	16 (244)	- (4)	
Low	High	Larger		6 (227)	2 (89)	
	Other			9 (311)	- (31)	7 (55)
	Low	Smaller	- (23)	24 (153)	- (4)	

N =	3,162
Excluded Arts and Sciences and Other	39,014
NA Career Field	2,860
NA A.P.I.	595
NA Background	7,138
NA One or More	896
NA Plans	2,428
NA Reasons No Go	571
Total Weighted N =	56,664

and 24 per cent among low API, low SES, small city Christians.

Because recruits to Law and Medicine are concentrated in the groups whose rates for Next Year are high, there is very little postponement, but it is worth noting that among the minority of better students recruited from low SES smaller city families, one-quarter are not going on immediately and 16 per cent give financial obstacles and not motivation as their reason.

Turning to the small number of women aspiring to studies in Law and Medicine, within an API grouping, they show lower rates for Next Year than any kind of man, higher rates for motivation and roughly the same per cent citing financial obstacles. That is, even in these fields characterized by high motivation for advanced study, the women show less interest in going on to advanced study immediately.

Table 6.27 gives the prediction for Plans and Reasons among students anticipating careers in the Arts and Science fields. Numerous conclusions may be drawn, generally substantiating, for the Arts and Sciences, the general patterns discussed above.

a) There is a range in Next Year from 84 per cent among high API, Jewish men from larger cities and higher SES families to 19 per cent among low API, Christian, low SES, smaller hometown women.

b) Among Christian men, the SES-city index produces a range in Next Year from 61 to 78 for high API and 25 to 50 for low API; while among women and Jews of either sex, this variable makes little difference. If anything, low SES, big city Jews have higher rates for Next Year than their high SES co-religionists.

c) The sex difference is quite strong, even among high API women on the highest category of SES-hometown, only about half plan to go on immediately.

d) The only group with sufficient cases of Negroes to tabulate shows the expected difference. Forty per cent of the low API, Negro men are going on immediately in comparison to 25 per cent among low API, low SES, smaller city Christian, white males.

TABLE 6.27

PLANS FOR ADVANCED STUDY AND REASONS FOR NOT GOING ON FOR ADVANCED STUDY AMONG STUDENTS NAMING AN ARTS AND SCIENCE FIELD AS FUTURE CAREER

a) Per cent Next Year

A.P.I.	SES	Hometown	Female			Male		
			Protestant and Catholic	Jewish	Negro	Protestant and Catholic	Jewish	Negro
High	High	Larger	49 (873)	42 (143)	↓	78 (744)	84 (222)	↓
	Other		38 (832)	59 (106)	↓	72 (1,137)	85 (131)	↓
	Low	Smaller	50 (339)	- (6)	- (48)	61 (663)	- (10)	- (47)
Low	High	Larger	20 (213)	- (27)	↓	50 (297)	- (48)	↓
	Other		18 (219)	- (29)	↓	38 (626)	70 (57)	↓
	Low	Smaller	19 (135)	- (3)	- (35)	25 (606)	- (2)	40 (83)

b) Per cent Motivational Reasons

A.P.I.	SES	Hometown	Female			Male		
			Protestant and Catholic	Jewish	Negro	Protestant and Catholic	Jewish	Negro
High	High	Larger	41 (873)	46 (143)	↓	12 (744)	13 (222)	↓
	Other		49 (832)	27 (106)	↓	15 (1,137)	9 (131)	↓
	Low	Smaller	39 (339)	- (6)	- (48)	18 (663)	- (10)	- (47)
Low	High	Larger	63 (213)	- (27)	↓	28 (297)	- (48)	↓
	Other		62 (219)	- (29)	↓	32 (626)	23 (57)	↓
	Low	Smaller	61 (135)	- (3)	- (35)	34 (606)	- (2)	7 (83)

TABLE 6.27--Continued

c) Per cent Financial Reasons

A.P.I.	SES	Hometown	Female			Male		
			Protestant and Catholic	Jewish	Negro	Protestant and Catholic	Jewish	Negro
High	High	Larger	9 (873)	10 (143)	↓	4 (744)	1 (222)	↓
	Other		12 (832)	7 (106)		7 (1,137)	2 (131)	
	Low	Smaller	11 (339)	- (6)	- (48)	17 (663)	- (10)	- (47)
Low	High	Larger	11 (213)	- (27)	↓	9 (297)	- (48)	↓
	Other		13 (219)	- (29)		20 (626)	2 (57)	
	Low	Smaller	12 (135)	- (3)	- (35)	31 (606)	- (2)	34 (83)

N = ...	7,681
Excluded: Law and Medicine and Other	34,597
NA Career Field	2,860
NA A.P.I.	595
NA Background	7,036
NA One or More	896
NA Plans	2,428
NA Reasons No Go	571
Total Weighted N = ...	56,664

TABLE 6.27--Continued

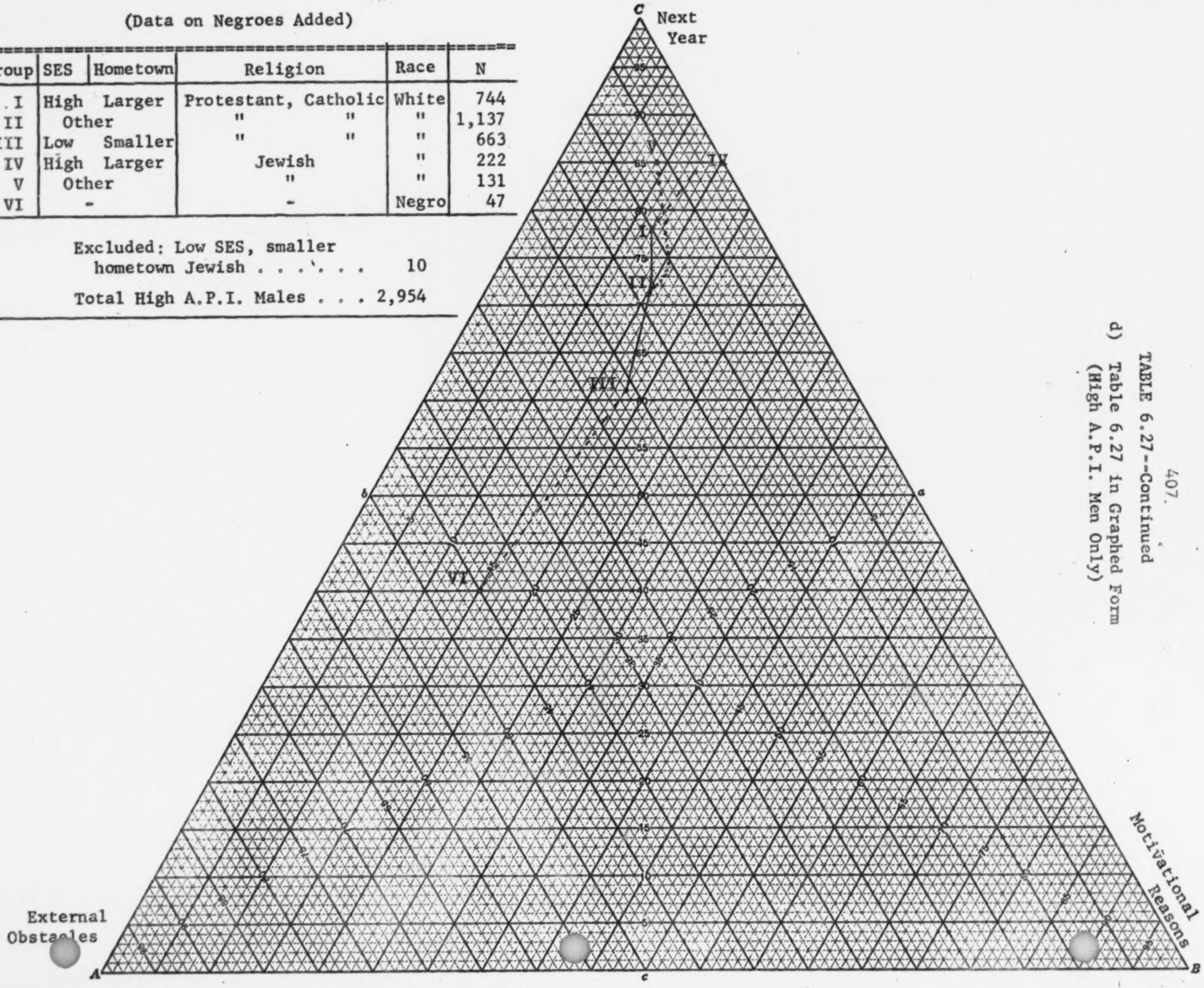
d) Table 6.27 in Graphed Form
(High A.P.I. Men Only)

(Data on Negroes Added)

Group	SES	Hometown	Religion	Race	N
I	High	Larger	Protestant, Catholic	White	744
II		Other	" "	"	1,137
III	Low	Smaller	" "	"	663
IV	High	Larger	Jewish	"	222
V		Other	"	"	131
VI		-	-	Negro	47

Excluded: Low SES, smaller
hometown Jewish 10

Total High A.P.I. Males . . . 2,954



e) Among men, low API and low scores on the SES-city index are associated with lessened motivation, 12 per cent of the high API, high SES, larger city men reporting motivational reasons as compared with 34 per cent of the low API, low SES smaller city men (these comparisons are based on Christians, there being too few small town Jews for tabulations).

f) Christians tend to be higher than Jews on low motivation.

g) Among women, motivation is associated with API, but not SES-city or religion, and low motivation is frequent. Among high API girls this reason turns up in over one-third of the cases and among low API women in over 60 per cent.

h) Financial obstacles among men are associated mostly with the SES-city index, a range from four to 17 being found for high API Christians and nine to 31 per cent among low API Christians.

i) Jews are lower than Christians on financial obstacles.

j) Financial reasons have no clear-cut associations among women, around 10 to 12 per cent of each category citing them.

k) Among high API men, financial obstacles are rare, being cited by less than 10 per cent of each group except among the low SES, smaller city Christians. In this group, however, 17 per cent fall into this classification.

While low API students have low rates for Next Year, it is debatable whether it is in the national interest to pump into immediate graduate study students from the reservoir of those in the bottom half of the national graduating class. Similarly, while girls provide an untapped supply of graduate students, it is hard to conceive of their delay or abandonment as scandalous in any society which wishes to maintain the family as a major social institution. This leaves high API men as the group for which there is justifiable concern. By presenting data for Negroes, although there are only 47 cases rather than the requisite 50, we can see how social factors affect their plans.

To begin with let us see how the high API men distribute in these categories by repercentaging data from Table 6.27. Negroes are arbitrarily assigned to the low SES, smaller city category, as usual.

Percentage Distribution of High API Men

SES	Hometown	Whites		Negroes	Total Per cent
		Christians	Jews		
High	Larger	25	8	0	33
Other		38	4	0	42
Low	Smaller	22	0	2	24
Total per cent . .		85	12	2	99

N = 2,954

Table 6.27 d) distributes these cases in graph form into three groups: I) Next Year, II) Motivational, III) External Obstacles, as defined by our Plans-Reasons Index.

The resulting graph resembles an archery bow. That is, it is essentially a line running from 100 per cent Next Year toward 100 per cent External Obstacles, although in the center it is pulled a little toward the Motivational pole. That is, among high API males, most of the group variation is associated with perceived obstacles, not with differences in motivation for advanced study.

Considering first Christian Whites, we see a 17 per cent variation in plans for immediate study as we move along the SES-city scale. Most of this comes from perceived external obstacles which vary from 10 per cent in the top group to 21 per cent in the bottom. Motivation does decrease a little with the index, the per cent with low motivational reasons rising from 12 to 18.

The figures for the two Jewish groups are pulled well toward Next Year in comparison with Christians matched in city-SES, so that, in fact, the group with the highest rates of all are Jews from the middle of the SES-city index whose rates for Next Year are one per cent higher than the high SES Jews. The effect appears mostly in the form of perceived lowering of external obstacles for Jews, although we think it should really be attributed to motivation. At the opposite pole the rates for Negroes are depressed and their rates for external obstacles are raised when compared with low SES, smaller city Christians.

Our belief is that three general conclusions may be drawn from these materials:

1) The fact that, among Jews and regardless of SES (variations on the SES-city index among Jews are almost entirely variations in SES), close to 85 per cent plan immediate study, sets a sort of "norm" which can serve to evaluate other groups. That is, we can interpret this figure as the rates of immediate study to be expected for a qualified group, living where schools are available, and with the highest motivation, the remaining 15 per cent probably being fairly irreducible.

2) The fact that among the 87 per cent of the high API males who are not Jewish, rates for immediate study vary from 40 to 78 per cent and are all well below the Jews suggests that there is considerable room for improvement of recruitment to graduate school among high performers in social groups whose motivation and location work against them. In particular, the 61 per cent attendance expectations among low SES, smaller city students (who constitute 22 per cent of the high API Arts and Science men) are disturbing when we remember that these are all better male students planning careers in Arts and Science fields.

3) The fact that the bulk of the variation is in "External Obstacles," not in "Motivation" needs stress, but with a little re-interpretation. The low rates for motivational reasons are important, in the sense that they tell us that the great bulk of these students accept the desirability of advanced study, and the problem in not one of "selling" graduate school to them. At the same time, we are not persuaded that there is not a motivational component to the

"External Obstacles" group, and that if, somehow, it were possible to "sell them even harder" on the advantages of graduate school, many could undoubtedly triumph over the obstacles. There undoubtedly remain, however, a hard core of genuine financial problems among young fathers, students who are living where there is no graduate school, and students who have incurred debts during college. Financial aid programs perhaps can be developed and expanded to meet their needs. Our personal belief, however, and one which goes beyond the data, is that a great part of the problem lies in the fact that students are not well informed on the "facts of life" regarding graduate school, the economic costs of postponement, the availability of stipends, and the availability of schools; and that if a systematic attempt were made to counsel, during their junior year in college, all high API men with Arts and Science majors or career preferences, considerable improvement in these rates would result. America's colleges and universities are continually blamed for not taking on tasks of various sorts, but the writer's feeling is that if the colleges and universities realized that graduate school is more likely for a bright college senior than college for a bright high school senior, and if counseling for postgraduate study were as effective as high school counseling for college attendance, conspicuous improvements could be made on the now bumpy bridge from college to graduate school.

CHAPTER VII

THE FUTURE GRADUATE STUDENT

In Chapter VI plans for graduate study were analyzed considering only very broad groupings of career fields. Thus, the treatment of the Plans Index ignored differences between chemists and historians, as well as differences between chemists and physicists. Such a crude classification was justified by the fact that, compared with other fields, all the fields within the broad groups have quite similar distributions on the Plans Index.

In this final chapter we will move in for a finer focus on specific fields of study. Because of the high rates of anticipated graduate work and the strong association between graduate field and career field, a number of the results may be anticipated immediately. It would be amazing to find much difference between the students planning to study Medicine and the previous findings on students planning careers in Medicine. For other fields, however, the situation is not so obvious. While Education is a woman's field, men are much more likely to anticipate graduate study. Are the graduate students[1] in Education predominantly men or predominantly women? In addition we shall be able to examine a finer breakdown of fields, the Arts and Science grouping being classified into 23 fields rather than four divisions, and Nursing, Social Work, and Health Professions other than Medicine or Nursing being broken out from the group previously called "Other Professions."

A price will be paid for this additional detail, for the numerous small groupings make complex statistical controls cumbersome, and it will be impossible in most instances to report "partial" relationships. However, the gain in detail may offset the loss in understanding of complex causal relationships.

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[1] For literary convenience we shall speak of all students falling into "Next Year" or "Later" on the Plans Index as graduate students, although undoubtedly a number will fall by the wayside.

The classification of fields used in this chapter, along with the weighted total cases, is shown in Table 7.1.

Students who anticipated advanced study in these 33 fields will be compared on a number of items. Three general groups of characteristics will be reported--Personal Characteristics, Academic Plans, and Career Plans.

Personal Characteristics

Chapters III and IV have already shown the ways in which students aiming for careers in different broad occupational groups vary in sex, Academic Performance, Values, and Background Characteristics. In comparing graduate students we shall use the following familiar measures: API, Sex, SES, Hometown, Religion, and Occupational Values (People, Original, Money), along with two new ones, self ratings of conventionality and political ideology.

The questionnaire asked each student to rate himself on a continuum from "Conventional in opinions and values" to "Unconventional in opinions and values." While no claim is made that this crude measure approximates the more precise instruments used in personality research, the question was included because of the large number of personality studies of "authoritarianism," "creativity," "open mindedness," etc., which suggest that there are important differences between people who are conventional and unconventional in their opinions and values. No validity data are available on this item, but some of its flavor may be inferred from its association with items in the self-rating adjective check-list questions. The following self-descriptions were associated with this question at a Q value of .15 or more (RSS).

The 45 per cent of students defining themselves as less conventional (Fairly Unconventional, Very Unconventional,

TABLE 7.1

CLASSIFICATION OF GRADUATE FIELDS (AMONG STUDENTS WHO ARE NEXT YEAR OR LATER ON PLANS)

Group	Field	N
Professional	Education	11,691
	Business (Accounting, Advertising, Public Relations, Secretarial Science, Industrial or Personnel Psychology, All Other Business and Commercial Fields)	4,561
	Engineering	3,060
	Law	2,456
	Medicine	1,440
	Social Work, Group Work	724
	Other Health (Dentistry, Optometry, Pharmacy, Physical Therapy, Veterinary Medicine, Medical Technology, Dental Hygiene, Other Health Fields)	669
	Nursing	438
	Other (Military Science, Public Administration, Agriculture, Forestry, Fish and Wild Life, Architecture, City Planning, Home Economics, Journalism, Library Science, Theology, Religion, Other Professions)	3,038
Physical Sciences	Mathematics and Statistics	902
	Chemistry	864
	Physics	727
	Earth Sciences (Geology, Geography, Geophysics)	272
	Other (Astronomy, Astrophysics, Oceanography, Metallurgy, Meteorology, Physical Science, General and Other)	158
Biological Sciences	Biology	363
	Biochemistry	188
	Zoology	158
	Microbiology	132
	Botany	106
	Physiology	98
	Other (Anatomy, Biophysics, Entomology, Genetics, Pathology, Pharmacology, Other)	290

TABLE 7.1--Continued

Group	Field	N
Social Sciences	Political Science, International Relations	690
	Economics	470
	Sociology	379
	Clinical Psychology	375
	Other Psychology (Social Psychology, Experimental and General, Other)	285
	Other (Anthropology, Archeology, Area and Regional Studies, Social Science, General and Other)	288
Humanities	Fine and Applied Arts (Art, Music, Speech, Drama, etc.)	1,429
	English, Creative Writing	1,201
	History	1,142
	Classical and Modern Languages	726
	Philosophy	205
	General and Other	201
	N =	39,726
	NA, Graduate Field	2,127
	Excluded from this Table:	
	Not Going to Graduate School	12,383
	NA, Plans	2,428
	Total Weighted N =	56,664

Neither) were more likely to describe themselves as...Rebellious, Intellectual, Impetuous, Dominant, Lazy, Sophisticated, High Strung, Moody, Forceful, Idealistic, Talkative, Witty, and Cultured.

The 55 per cent of students defining themselves as Very or Fairly Conventional were more likely to describe themselves as Cooperative, Happy, and Reserved.

The question on political ideology divides the students into those claiming to be Fairly or Very "Politically Liberal" versus those claiming to be Fairly or Very "Politically Conservative" or "Neither." The question is included, not because of its association with any known research, but merely because it has some intrinsic interest as indicative of the social perspectives of young people oriented toward different fields.

API and Sex

The distribution of future graduate students in terms of their academic ability is a matter of considerable interest, regardless of the particular field for which one is rooting. The measure used in this research, the Academic Performance Index, is fairly crude, being simply the student's reported cumulative grade point average weighted by the quality of his institution. At the same time API has been shown to be predictive of certain career choices and highly predictive of Plans for postgraduate study.

Table 7.2 a) gives the distribution by anticipated graduate field. In spite of the API selection for graduate study there is considerable variation, 44 per cent of those in English being in the Top Fifth as contrasted with seven per cent of those in the Health Professions other than Medicine and Nursing.

TABLE 7.2

GRADUATE FIELD BY ACADEMIC PERFORMANCE INDEX

a) Ranked by Per cent in the Top Fifth on A.P.I.

Graduate Field	Academic Performance Index			Total	
	Top Fifth	Above Average	Bottom Half	Per Cent	N
English	43.9	37.1	19.0	100.0	1,185
Physics	42.3	28.6	29.1	100.0	719
Medicine	42.1	42.4	15.5	100.0	1,422
Philosophy	40.7	40.7	18.6	100.0	204
Language	40.2	40.8	19.1	100.1	719
Political Science	36.9	41.3	21.8	100.0	680
Other Physical Sciences	34.2	45.0	20.8	100.0	149
Mathematics	33.2	35.3	31.5	100.0	895
Biochemistry	32.1	41.7	26.2	100.0	187
Clinical Psychology	29.9	31.5	38.5	99.9	371
History	28.8	35.9	35.3	100.0	1,134
Other Psychology	28.1	35.6	36.3	100.0	281
Nursing	27.6	47.7	24.8	100.1	428
Other Social Sciences	27.4	44.2	28.4	100.0	285
Economics	27.4	36.6	36.0	100.0	464
Microbiology	26.9	27.7	45.4	100.0	130
Chemistry	25.9	37.3	36.8	100.0	857
Fine Arts	25.3	39.9	34.8	100.0	1,398
Engineering	24.6	37.3	38.1	100.0	3,023
Zoology	24.4	36.5	39.1	100.0	156
Law	23.5	36.0	40.5	100.0	2,430
Other Biological Sciences	20.2	33.3	46.5	100.0	282
Physiology	19.6	29.3	51.1	100.0	92
Other Professions	17.8	34.4	47.9	100.1	2,990
Geology-Geography (Earth)	17.5	44.4	38.1	100.0	268
Botany	17.0	31.0	52.0	100.1	100
Social Work	16.9	41.2	42.0	100.1	712
Sociology	16.6	35.7	47.7	100.0	373
Other Humanities	15.5	52.5	32.0	100.0	194
Biology	14.0	44.7	41.3	100.1	358
Education	13.6	39.9	46.5	100.0	11,523
Business	13.2	37.2	49.6	100.0	4,503
Other Health	6.6	40.2	53.3	100.1	655

N =	39,167
NA A.P.I. Only	559
NA Graduate Field Only	2,087
NA Both	40
Excluded from Table:	
Not Going to Graduate School	12,383
NA Plans Index	2,428
Total Weighted N =	56,664

TABLE 7.2--Continued

b) Grouped by Division

Per cent Top Fifth on API	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
50-						
48-						
46-						
44-					English	
42-	Medicine	Physics				
40-					Philosophy Languages	
38-				Political Sci.		
36-						
34-		Other Math				
32-			Biochemistry			
						→ Future All Graduate Students
30-				Clinical Psych		
28-	Nursing			Psych, Other Other, Economics	History	
26-	Engineering	Chemistry	Microbiology		Art	
24-	Law		Zoology			
22-						
20-			Other, Physiology			
						→ All Seniors
18-	Other Social Work	Earth	Botany	Sociology		
16-					Other	
14-	Education Business		Biology			
12-						
10-						
8-						
6-	Health					
4-						
2-						
0-						

TABLE 7.2--Continued

c) Per cent Top Fifth by Per cent Top Fifth Plus Above Average

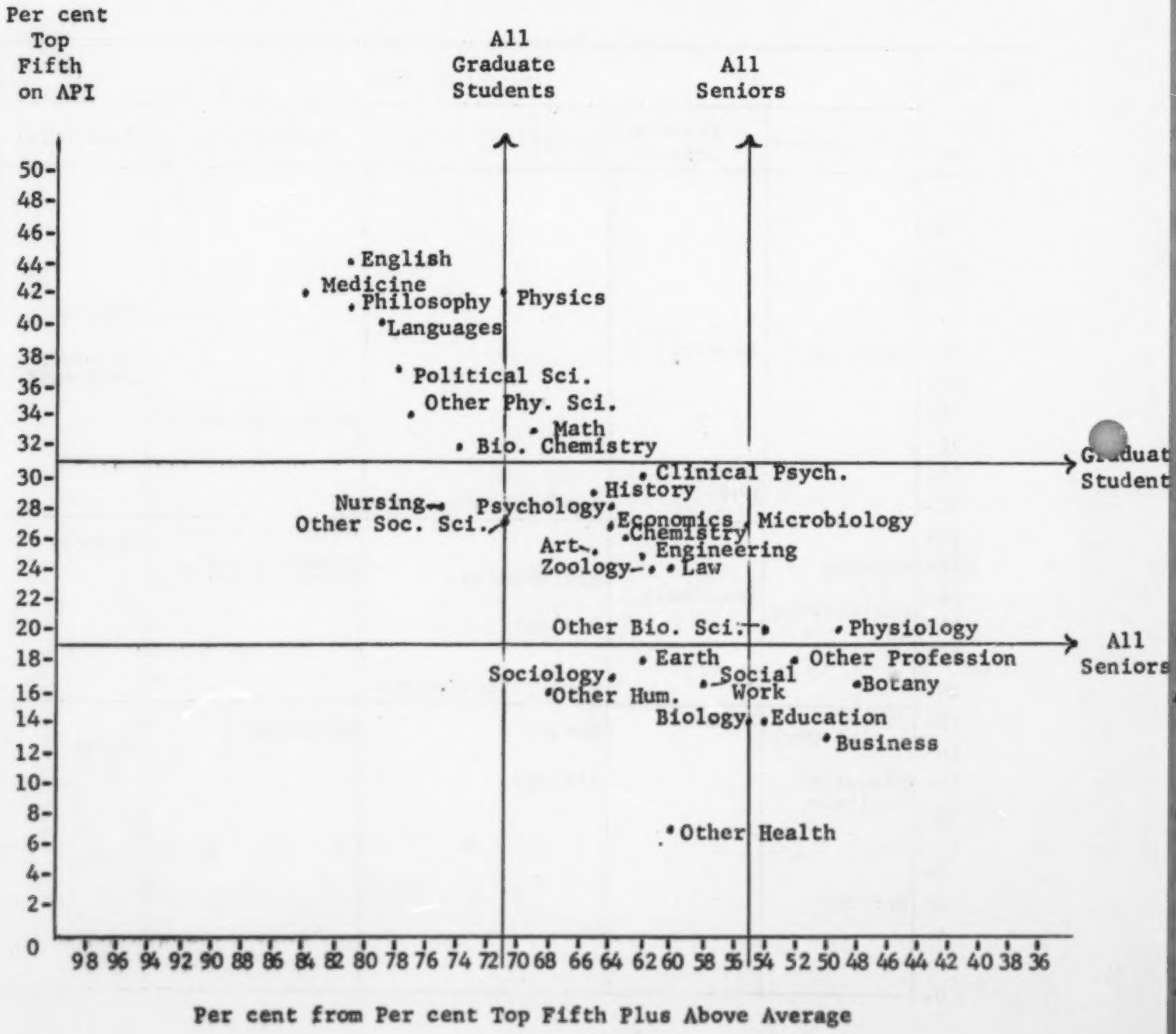


Table 7.2 b) gives the distribution of Top Fifth API with the fields grouped by division. Although generally speaking the Arts and Science fields surpass the professional fields, the variation within divisions is considerable. In each column in Table 7.2 b) there are one or more fields which surpass future graduate students as a whole, and one or more fields below graduating seniors as a group.

Within the professional fields, Medicine, as expected, has the top position, 42 per cent being in the Top Fifth and Medicine being the only professional field which surpasses the generality of future graduate students. Nursing, Engineering, and Law come next, being above seniors in general but below the total group of graduate students. At the other extreme, graduate students in Health, Business, Education, Social Work, and Other Professions are less likely to come from the Top Fifth than graduating seniors in general.

Within the Science fields, too, there is considerable variation. Physicists, mathematicians, other physical scientists, and biochemists surpass graduate students in general, physicists being particularly high; chemists, microbiologists, zoologists, physiologists and other biological scientists surpass the senior class in general, but fall below graduate students in general; and botanists, general biologists, and earth scientists fall into the bottom group.

Among Social Sciences and Humanities, English, Philosophy, Languages, and Political Science fall into the top group; Clinical Psychology, Other Psychology, History, Other Social Sciences, Economics, and Art fall in the middle group; and Other Humanities and (hmmm!) Sociology have a smaller proportion of high API students than college seniors in general.

By the use of the proportion of Top Fifth students as the Index of Academic Performance, we may have slighted any field which attracts a disproportionate number of "Above Average" students but has relatively few from the very top or the bottom half. When, however, the fields are ranked in terms of the per cent from Top Fifth or Above Average, the ordering of fields remains quite similar [Table 7.2 c)].

It has been shown that lower API levels are associated with postponement of graduate study, the superior academic performers tending to be in Next Year rather than Later. Therefore, it is worthwhile to see whether the ranking of fields holds when Plans are held constant. If it is assumed that only a small proportion of the "Laters" will actually enter graduate school (an assumption previously suggested to be unwarranted) fields with high rates of postponement may have been treated unjustly in Table 7.2), their API levels being "dragged down" by less able students who may not actually get into advanced study [Table 7.3 a)].

When the per cent from the Top Fifth among the Next Year students is plotted against the per cent among the Laters, a strong correlation appears [Table 7.3 b)]. That is, the fields which are characterized by high API levels among the students going on immediately also tend to have high API levels among those going on Later. There are exceptions, of course. In Philosophy, for example, the Next Years are extremely high on API and the Laters are quite low; but in general the rank orders are similar.

A diagonal line has been plotted in Table 7.3 b) to indicate all points where Next Year and Later would have the same API percentages. Except for Social Work and Health Professions, all of the dots lie above the diagonal, which means that except in these two fields there is a correlation between API and immediacy of advanced study.

TABLE 7.3

GRADUATE FIELD AND A.P.I., CONTROLLING FOR PLANS INDEX

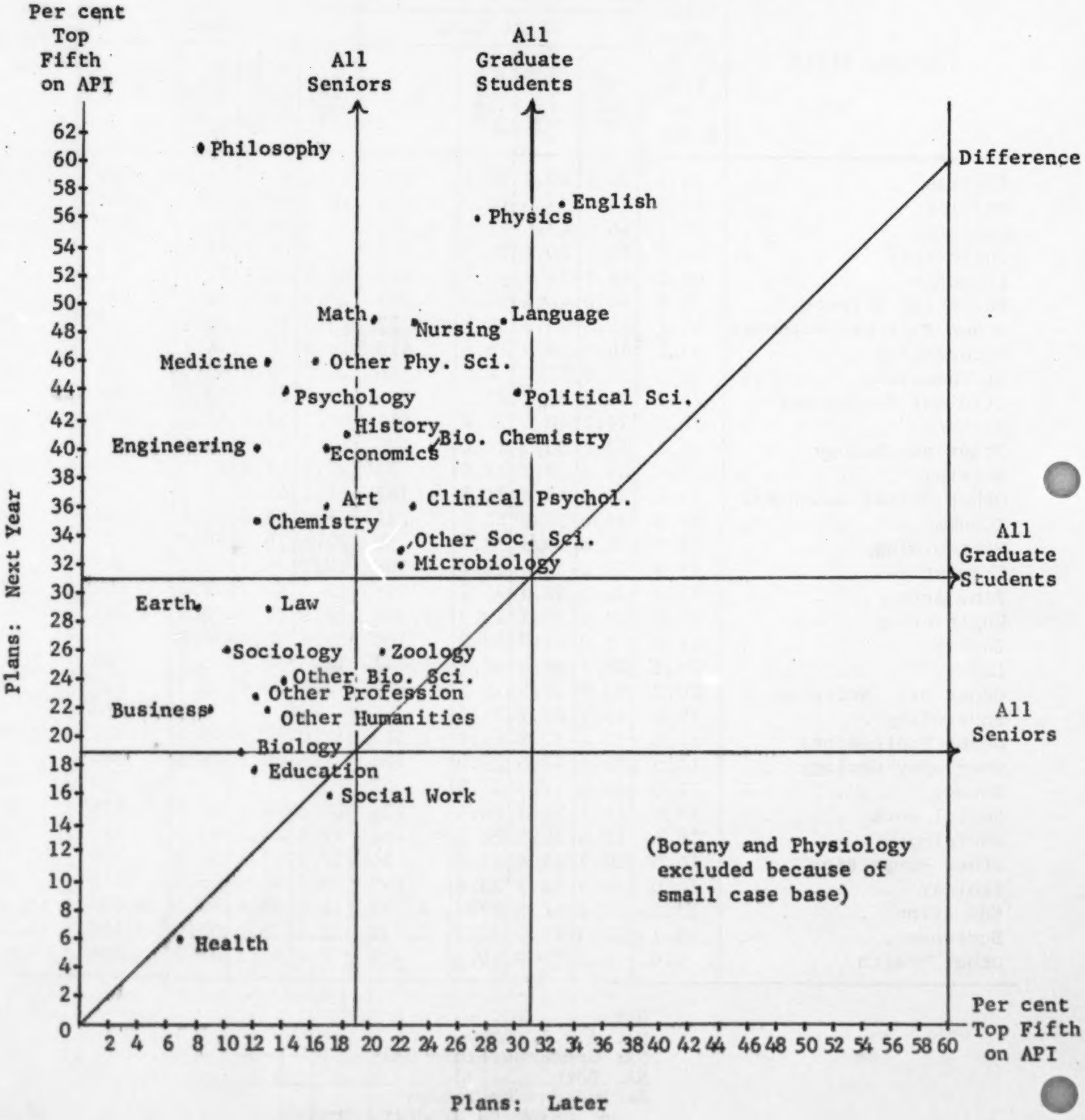
a) Distribution of A.P.I. within Plans Groups, for Each Graduate Field

Graduate Field	Total Per cent in Top Fifth on A.P.I.	Plans								Total N
		Next Year				Later				
		Top Fifth	Above Average	Bottom Half	N	Top Fifth	Above Average	Bottom Half	N	
English	43.9	56.9	29.8	13.2	536	33.1	43.1	23.7	649	1,185
Physics	42.3	55.7	29.6	14.7	463	18.0	27.0	55.1	256	719
Medicine	42.1	46.0	42.6	11.4	1,251	12.9	40.9	46.2	171	1,422
Philosophy	40.7	61.1	24.6	14.3	126	7.7	66.7	25.6	78	204
Language	40.2	48.7	38.2	13.1	413	28.8	44.1	27.1	306	719
Political Science . .	36.9	44.0	42.5	13.5	341	29.8	40.1	30.1	339	680
Other Physical Sciences	34.2	45.6	45.6	8.7	92	15.8	43.8	40.4	57	149
Mathematics	33.2	49.0	34.4	16.6	410	19.8	36.1	44.1	485	895
Biochemistry	32.1	39.6	52.1	8.3	96	24.2	30.8	45.1	91	187
Clinical Psychology .	29.9	35.6	35.1	29.3	205	22.9	27.1	50.0	166	371
History	28.8	40.7	40.1	19.2	511	19.1	32.4	48.5	623	1,134
Other psychology . . .	28.1	43.7	33.3	23.0	135	13.7	37.7	48.6	146	281
Nursing	27.6	49.3	38.7	12.0	75	22.9	49.6	27.5	353	428
Other Social Sciences.	27.4	32.6	45.6	21.8	147	21.7	42.8	35.5	138	285
Economics	27.4	39.6	37.8	22.6	217	16.6	35.6	47.8	247	464
Microbiology	26.9	32.2	28.8	39.0	59	22.5	26.8	50.7	71	130
Chemistry	25.9	35.2	39.4	25.4	508	12.3	34.4	53.3	349	857
Fine Arts	25.3	36.1	38.6	25.2	595	17.3	40.8	41.8	803	1,398
Engineering	24.6	39.6	37.1	23.3	1,366	12.2	37.4	50.4	1,657	3,023
Zoology	24.4	26.0	41.0	33.0	100	21.4	28.6	50.0	56	156
Law	23.5	28.7	38.5	32.7	1,642	12.6	30.7	56.7	788	2,430
Other Bio. Sciences .	20.2	23.8	35.5	40.7	172	14.5	30.0	55.5	110	282
Physiology	19.6	18.9	25.7	55.4	74	-	-	-	18	92
Other Professions . .	17.8	23.4	35.8	40.8	1,513	12.0	32.9	55.1	1,477	2,990
Geography-Geology . .	17.5	29.0	46.0	25.0	124	7.6	43.1	49.3	144	268
Botany	17.0	20.9	31.3	47.8	67	-	-	-	33	100
Social Work	16.9	16.1	55.5	28.4	236	17.2	34.0	48.7	476	712
Sociology	16.6	25.6	39.3	25.0	152	10.4	26.2	63.3	221	373
Other Humanities . . .	15.5	22.2	64.8	13.0	54	12.8	47.8	39.3	140	194
Biology	14.0	18.9	50.3	30.8	143	10.7	40.9	48.4	215	358
Education	13.6	17.8	42.9	39.2	3,391	11.9	38.6	49.5	8,132	11,523
Business	13.2	22.3	42.4	35.3	1,335	9.4	35.0	55.6	3,168	4,503
Other Health	6.6	6.2	37.9	55.9	451	7.4	45.1	47.5	204	655

N = ...	39,167
NA, A.P.I. Only	559
NA, Graduate Field Only	2,087
NA, Both	40
Excluded from Table:	
Not Going to Graduate School	12,383
NA, Plans Index	2,428
Total Weighted N = ...	56,664

TABLE 7.3--Continued

b) Per cent Top Fifth API Among "Next Year," Plotted Against Per Cent Top Fifth API Among "Later"



Although the correlation between API levels in the two Plans categories is high and although the Laters are generally below the Next Years in Academic Performance, there is enough variation to make a detailed examination worthwhile. By using the API levels of all future graduate students and all seniors as landmarks, we can locate some interesting groups. First, let us examine all the fields where those going on Next Year are above the total group of graduate students in API. These are the fields above 31 per cent on the vertical axis in Table 7.3 b). Although generally speaking those going on later in these fields are better academic performers than those going on later in other fields, there is considerable variation. We can group the Laters as follows:

1) Better than future graduate students in general: English.
2) Better than seniors in general: Physics, Math, Nursing, Languages, Political Science, Biochemistry, Clinical Psychology, Other Social Sciences, Microbiology
3) Below seniors in general: Philosophy, Medicine, Other Physical Sciences, Psychology, Engineering, History, Economics, Chemistry, Art.

The quality of the future graduate students is quite different for different fields, even though each has high academic performers among those going immediately. For English, the students who are postponing graduate study are superior in academic performance to the generality of future graduate students, although not as high as the Next Years in English. On the other hand, in Philosophy, Medicine, Other Physical Sciences, Psychology, Engineering, History, Economics, Chemistry, and Art, the students who are postponing advanced study are far from outstanding, having fewer top API students among them than the graduating class in general.

Shifting to the fields in the bottom half of Table 7.3 b), one sees that except for Zoology, the Laters are all inferior in API to a cross-section of the 1961 graduating class. (For Zoology both Next Year and Later students are in the middle group between seniors in general and graduate students in general.) In General Biology, Education, Social Work, and Health

Professions, both Next Year and Later are below seniors in general; while for Earth Sciences, Law, Sociology, Other Biological Sciences, Business, Other Professions, and Other Humanities, the Next Year group surpass seniors in general but not future graduate students in general.

If one is willing to assume that postponed graduate studies are particularly undesirable for high API students, it follows that improvement of attendance rates would be most desirable in English, Physics, Mathematics, Nursing, Languages, Political Science, Biochemistry, Clinical Psychology, Other Social Sciences, Microbiology, and Zoology--these being the fields where the Later students have API levels superior to graduating seniors in general. For all the remaining fields, however, those students who are postponing their studies have an API level equal or inferior to the generality of graduating seniors, and although there are a considerable number of promising students among them, their reservoir of talent is not such that postponement has the same implication of talent loss as in the previous list of fields.

Among the students expecting to begin their studies immediately, it has been shown that those who had not been accepted in June, 1961 had API levels about the same as the Laters and much lower than the accepted students. Therefore it is worth looking at the API data for the students who had been accepted for graduate school by June, 1961 (Table 7.4).

The academic performances of the students accepted are clearly superior, for in all fields except the health professions they are above the generality of graduating seniors in the per cent from the Top Fifth in API, and in 12 fields (English, Philosophy, Physics, Other Physical Sciences, Mathematics, Foreign Languages, Other Psychology, Economics, Political Science, Engineering, History, and Medicine), half or more are from the Top Fifth. As usual some exceptions turn up, but considering the fields as a group, their rank order on API among those accepted is very similar to their ordering for all students expecting graduate study. One of the exceptions deserves mention, however. While Medicine is toward the top

TABLE 7.4

GRADUATE FIELD AND A.P.I., AMONG STUDENTS ACCEPTED IN SPRING FOR GRADUATE STUDY IN FALL

a) Distribution of A.P.I. among Students Accepted in Spring, for Each Graduate Field

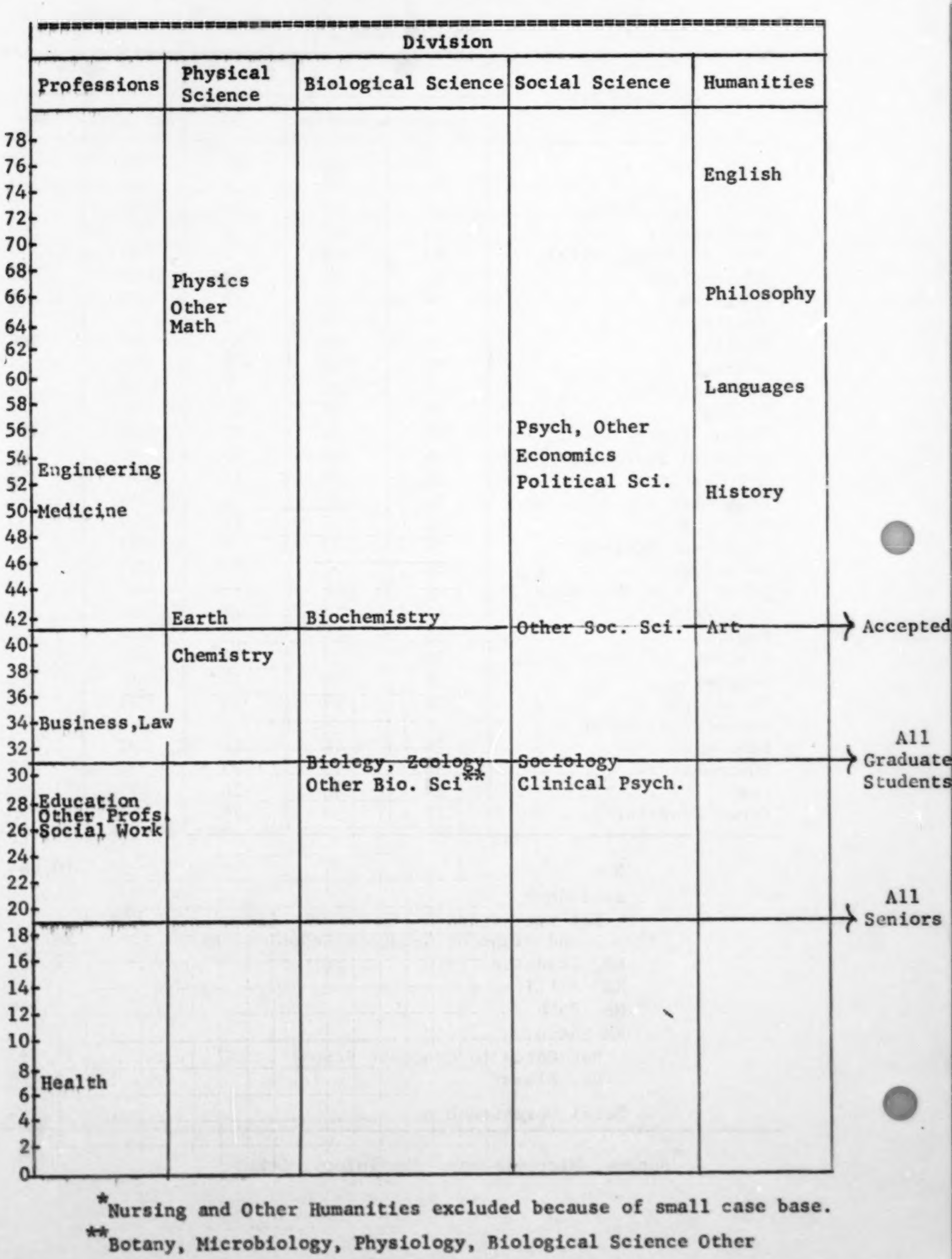
Graduate Field	A.P.I.			Total	
	High	Medium	Low	Per cent	N
Chemistry	39	38	22	99	427
Physics	67	24	9	100	360
Earth (Geol.-Geog.)	42	48	10	100	79
Mathematics	64	27	9	100	268
Phy. Sciences, Other	65	33	2	100	60
Engineering	53	34	13	100	791
Medicine	50	42	8	100	1,126
Nursing	-	-	-	-	25
Health	7	40	53	100	366
Biology	31	60	9	100	65
Biochemistry	42	51	7	100	74
Zoology	31	49	20	100	70
Other Bio.*	29	34	37	100	272
Clinical Psychology	28	36	36	100	135
Psychology	56	34	10	100	95
Economics	54	37	9	100	148
Social Work	26	47	27	100	133
Political Science	52	39	9	100	253
Sociology	31	52	17	100	98
Other Social Sciences	41	42	17	100	92
Fine Arts	41	40	19	100	341
English	75	20	5	100	361
History	51	35	14	100	315
Languages	59	31	10	100	293
Philosophy	66	19	15	100	100
Humanities, Other	-	-	-	-	16
Education	28	44	28	100	1,254
Business	34	46	20	100	635
Law	34	40	26	100	1,296
Other Professions	27	37	36	100	1,036

N =	10,584
Excluded:	
Not yet accepted to Graduate School Next Year and Planning Graduate School Later	28,583
NA, Graduate Field	2,087
NA, A.P.I.	559
NA, Both	40
Excluded:	
Not Going to Graduate School	12,383
NA, Plans	2,428
Total Weighted N =	56,664

*Botany, Microbiology, Physiology, Other.

TABLE 7.4--Continued

b) Per cent Top Fifth Among Students Accepted*



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*Nursing and Other Humanities excluded because of small case base.

**Botany, Microbiology, Physiology, Biological Science Other in API, regardless of Plans, its standing appears less impressive when only accepted students are considered. In terms of all students expecting graduate study, Medicine is surpassed by English alone, but when accepted students are considered, Physics, Other Physical Sciences, Mathematics, Engineering, Psychology, Economics, English, Philosophy, Languages, and History have greater proportion of Top Fifth students. The discrepancy arises from the fact that although the Laters in Medicine are quite low in API, there are very few of them. In many of the Arts and Science fields, however, the API level of the totality expecting graduate study is diluted by high proportions of lower API students with indefinite or postponed plans for advanced study.

Before concluding the analysis of API, it is necessary to consider the sex composition of the various fields (Table 7.5). Even though within a career field women are less likely to plan graduate study Next Year, over-all about the same proportion of men and women anticipate some advanced study, presumably because the concentration of men in the high attendance major professions and Sciences is offset by the low attendance Business fields and the lower API's of males, while the high proportion of women in Education raises their contribution to those planning advanced study some time. The sex distributions have few surprises in the professions and Physical Sciences, Nursing being quite feminine, Engineering quite masculine, etc. However, in the Biological Sciences there is a considerable range; Biochemistry and Microbiology being heavily feminine and Botany, Zoology, and Other Biological Sciences being quite masculine in composition. Similarly, in the Social Sciences, Economics stands out as an essentially masculine field while the other Social Science fields have a sex composition much like students in general. In the Humanities, Languages, English, Art, and Other are

TABLE 7.5

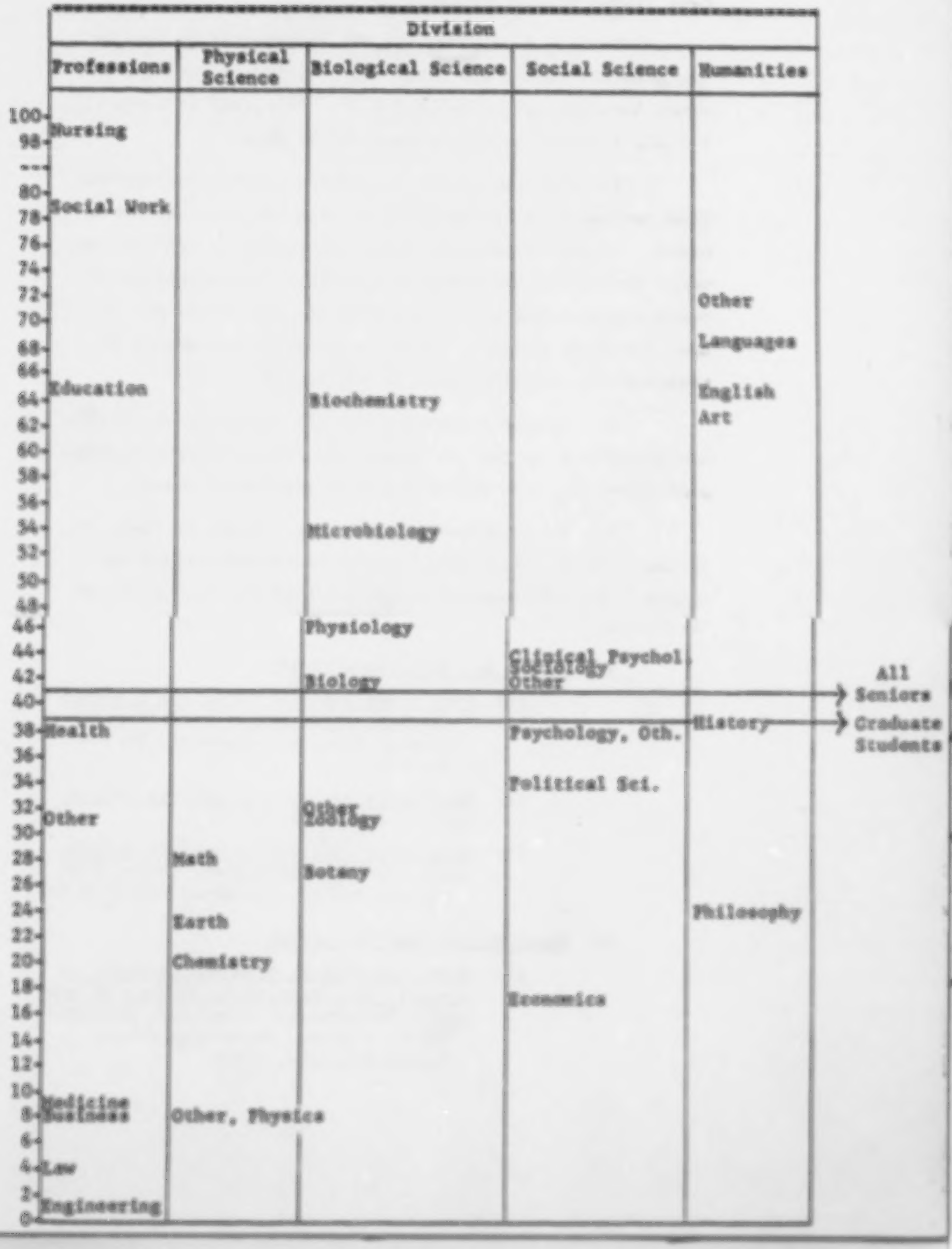
GRADUATE FIELD AND SEX

a) Ranked by Per cent Female

Graduate Field	Female	
	Per cent	N
Nursing	99	438
Social Work	79	724
Other Humanities	72	201
Languages	69	726
Education	65	11,691
English	65	1,201
Biochemistry	64	188
Fine Arts	63	1,429
Micrbiology	54	132
Physiology	46	98
Clinical Psychology	44	375
Sociology	43	379
Other Social Sciences	42	288
Biology	42	363
History	39	1,142
Other Psych	38	285
Other Health	38	669
Political Sciences	34	690
Other Bio. Sciences	32	290
Zoology	31	158
Other Professions	31	3,038
Mathematics	28	902
Botany	27	106
Philosophy	24	205
Geology-Geography (Earth)	23	272
Chemistry	20	864
Economics	17	470
Medicine	9	1,440
Business	8	4,561
Other Physical Sciences	8	158
Physics	8	727
Law	4	2,456
Engineering	1	3,060
N =		39,726
NA, Graduate Field		2,127
Excluded: Not Going to Graduate School		12,383
NA, Plans		2,428
Total Weighted N =		56,664

TABLE 7.5--Continued

b) Grouped by Division
(Per cent Female)



heavily feminine fields, while History and Philosophy tend to have strong male majorities.

Table 7.6 a) gives the API composition by sex for the graduate fields and Table 7.6 b) presents the data in chart form similar to Table 7.3 b). Referring to Table 7.3 b), a number of conclusions may be drawn:

1) The bulk of the fields lie below the diagonal line marking equal proportions of high API students for both sexes. In most fields the women are higher on API than the men. Philosophy and Medicine constitute exceptions, with men being more likely to come from the Top Fifth, and in Law, Political Science, Botany, Languages, and Health Professions the sex difference is negligible.

2) Generally speaking the API levels of the fields are correlated in the two sexes, the fields attracting high performing men also attracting high performing women.

3) The relationship is "loose" enough so that, as in the case of plans, it is useful to consider field variations. The information in Table 7.6 b) can be classified as follows:

A) Lesser Sex Difference on API

- (1) Both sexes superior to future graduate students in general: Medicine, Political Science, Languages, English, Physics.
- (2) Both sexes superior to seniors in general: Law, Chemistry, Art.
- (3) Both sexes inferior to seniors in general: Botany, Humanities, Other, Education, Health, Business, Social Work.

B) Women Higher than Men on API

- (4) Women superior to graduate students in general, men superior to seniors in general: Mathematics, Economics, Biochemistry, History, Psychology, Other, Social Sciences, Other.

TABLE 7.6

GRADUATE FIELD BY ACADEMIC PERFORMANCE INDEX, CONTROLLING FOR SEX

a) Ranked by Per cent in Top Fifth on A.P.I.

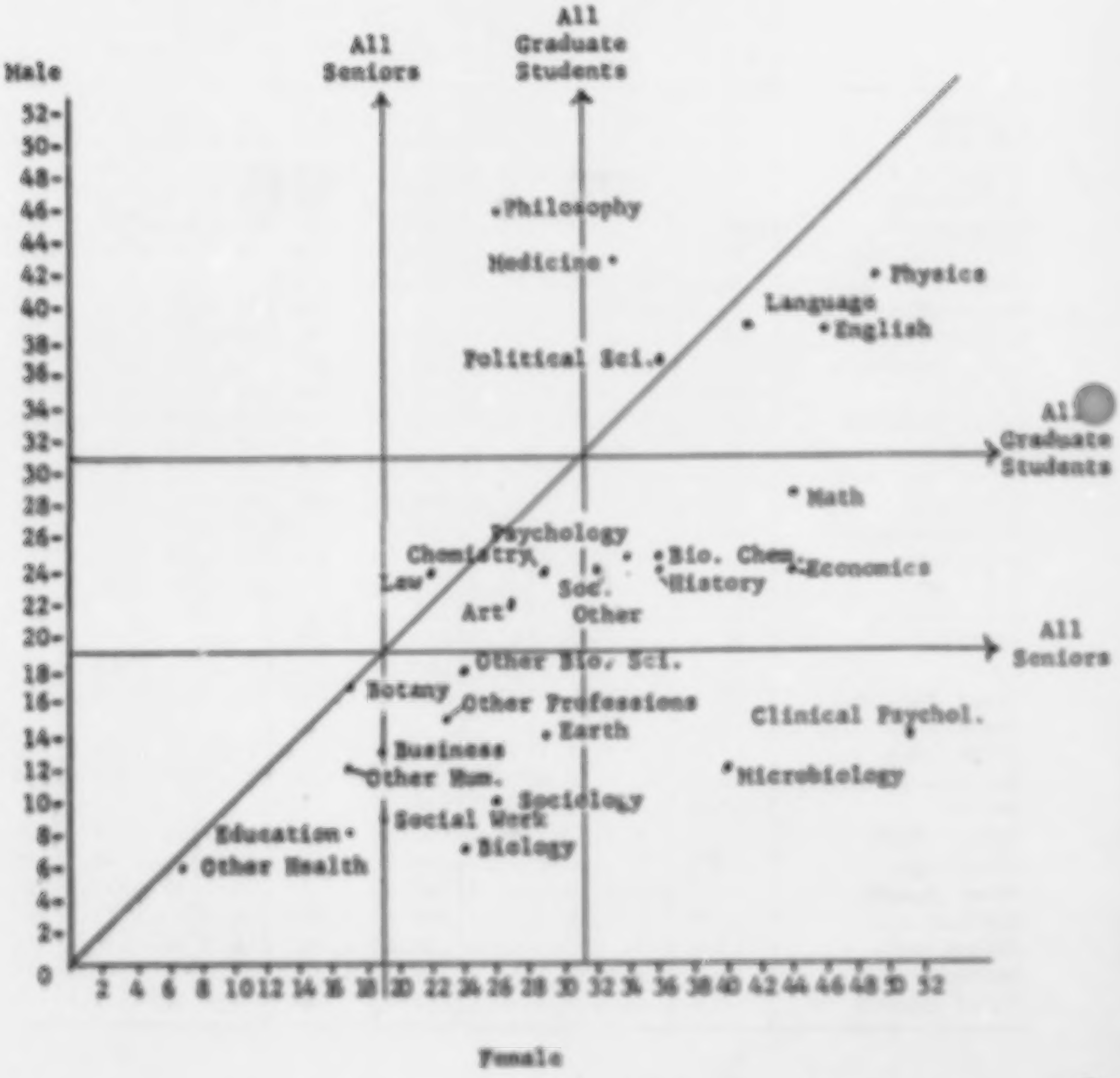
Graduate Field	Total Per cent in Top Fifth on A.P.I.	Male					Female				
		A.P.I.					A.P.I.				
		Top Fifth	Above Average	Bottom Half	Total		Top Fifth	Above Average	Bottom Half	Total	
					Per cent	N				Per cent	N
English	43.9	39.4	41.6	19.0	100.0	416	46.3	34.7	19.0	100.0	769
Physics	42.3	41.7	27.2	31.1	100.0	662	49.1	45.6	5.3	100.0	57
Medicine	42.1	43.0	42.3	14.8	100.1	1,292	33.1	43.8	23.1	100.0	130
Philosophy . . .	40.7	45.5	34.4	20.1	100.0	154	26.0	60.0	14.0	100.0	50
Language	40.2	39.3	37.5	23.2	100.0	224	40.6	42.2	17.2	100.0	495
Political Sci. .	36.9	37.3	37.1	25.6	100.0	450	36.1	49.6	14.3	100.0	230
Other Phy. Sci. .	34.2	35.3	42.6	22.1	100.0	136	-	-	-	-	13
Mathematics . . .	33.2	28.8	33.6	37.5	99.9	642	44.3	39.5	16.2	100.0	253
Biochemistry . .	32.1	25.4	52.2	22.4	100.0	67	35.8	35.8	28.3	99.9	120
Clin. Psychol. .	29.9	13.5	35.3	51.2	100.0	207	50.6	26.8	22.6	100.0	164
History	28.8	23.9	33.2	42.9	100.0	686	36.4	40.0	23.7	100.1	448
Other Psychol. .	28.1	24.6	31.4	44.0	100.0	175	34.0	42.5	23.6	100.1	106
Nursing	27.6	-	-	-	-	5	27.4	48.0	24.6	100.0	423
Other Soc. Sci. .	27.4	24.1	39.2	36.7	100.0	166	31.9	51.3	16.8	100.0	119
Economics	27.4	24.0	34.9	41.1	100.0	384	43.8	45.0	11.2	100.0	80
Microbiology . .	26.9	11.7	30.0	58.3	100.0	60	40.0	25.7	34.3	100.0	70
Chemistry	25.9	23.9	34.6	41.5	100.0	685	28.9	40.0	31.1	100.0	172
Fine Arts	25.3	21.8	36.7	41.6	100.1	510	27.4	41.8	30.9	100.1	888
Engineering . . .	24.6	24.7	37.1	38.2	100.0	3,001	-	-	-	-	22
Zoology	24.4	14.8	43.5	41.7	100.0	108	-	-	-	-	48
Law	23.5	23.6	35.2	41.2	100.0	2,320	21.8	52.7	25.5	100.0	110
Other Bio. Sci. .	20.2	18.5	29.1	52.4	100.0	189	23.7	41.9	34.4	100.0	93
Physiology . . .	19.6	-	-	-	-	47	-	-	-	-	45
Other Prof. . .	17.8	15.3	33.1	51.6	100.0	2,065	23.2	37.2	39.6	100.0	925
Geo.-Geog. (Earth)	17.5	14.1	49.0	36.9	100.0	206	29.0	29.0	41.9	99.9	62
Botany	17.0	16.9	28.6	54.5	100.0	77	-	-	-	-	23
Social Work . . .	16.9	8.7	32.7	58.7	100.1	150	19.0	43.4	37.5	99.9	562
Sociology	16.6	9.5	37.0	53.6	100.1	211	25.9	34.0	40.1	100.1	162
Other Humanities.	15.5	12.5	35.7	51.8	100.0	56	16.7	59.4	23.9	100.0	138
Biology	14.0	6.7	38.1	55.2	100.0	210	24.3	54.1	21.6	100.0	148
Education	13.6	7.7	31.5	60.8	100.0	4,027	16.8	44.4	38.8	100.0	7,496
Business	13.2	12.7	37.1	50.1	99.9	4,154	18.9	37.8	43.3	100.0	349
Other Health . .	6.6	6.4	30.5	63.1	100.0	407	6.9	56.0	37.1	100.0	248

N = ...	39,167
NA, A.P.I. Only	559
NA, Graduate Field Only	2,087
NA, Both	40
Excluded from Table:	
Not Going to Graduate School	12,383
NA, Plans Index	2,428
Total Weighted N = ...	56,664

TABLE 7.6--Continued

b) Per cent Male by Per cent Female

(Per cent Top Fifth on API)



(Physical Science Other,
Engineering, Zoology,
Physiology and Botany
excluded because of
small case base)

(5) Women superior to graduate students in general, men inferior to seniors in general: Clinical Psychology, Microbiology.

(6) Women superior to seniors in general, men inferior to seniors in general: Biological Sciences, Other, Other Professions, Earth, Sociology, Biology.

C) Men Higher than Women on API

(7) Men superior to graduate students in general, women superior to seniors in general: Philosophy.

From the viewpoint of social policy, it is possible to express mild regret that the sex difference runs the way it does. Although it is clear that the women are good students, a large portion of them are destined for marriage and family life, not for full-time, long-run careers in their fields. The facts of life are that the society will get many more man years of professional work from a man than a woman.

Assuming in addition that high academic performance in undergraduate studies is predictive of greater professional potential, a more realistic index of the input into graduate fields can be made by calculating not just the per cent of students who are high on API, but the per cent who are high API males, since low API students of either sex and high API women present some drawbacks.

Table 7.7 a) gives the percentages of those who are High API Males, High API Females and (by subtraction) Low API students, for all those planning study in the various fields and for those accepted by Fall, 1961. Among "All Planning Graduate Study," those who are either in the Top Fifth or Above Average are considered "High"; among those "Accepted by Spring," only those in the Top Fifth are considered "High" because of the generally higher API levels of this group. In Table 7.7 b) the same information for all future graduate

TABLE 7.7

GRADUATE FIELD AND PLANS, CONTROLLING FOR SEX AND A.P.I.

a) All Future Graduate Students and Those Accepted by Spring

Graduate Field	All Planning Graduate Study			Accepted by Spring		
	Male	Female	N	Male	Female	N
	Top Half			Top Fifth		
Chemistry	47	16	857	30	9	427
Physics	63	8	719	62	4	360
Geo.-Geog. (Earth)	48	13	268	30	11	79
Mathematics	45	24	895	48	16	268
Other Physical Sci.	71	8	149	62	3	60
Engineering	61	1	3,023	53	0	791
Medicine	77	7	1,422	46	3	1,126
Nursing	1	75	428	-	-	25
Other Health	23	24	655	5	2	366
Biology	26	32	358	9	22	65
Biochemistry	28	46	187	18	24	74
Botany	33	16	100	-	-	49
Microbiology	19	35	130	-	-	45
Physiology	14	34	92	-	-	44
Zoology	40	21	156	13	19	70
Biology, Other	46	21	282	26	2	134
Clinical Psychology	27	34	371	15	33	135
Other Psychology	35	29	281	36	20	95
Economics	49	15	464	47	7	148
Political Science	49	29	680	38	13	253
Sociology	26	26	373	15	15	98
Social Sciences, Other	37	35	285	25	25	92
Fine Arts	21	44	1,398	33	46	341
English	28	53	1,185	32	43	361
History	35	30	1,134	33	18	315
Languages	24	57	719	21	38	293
Philosophy	60	21	204	61	5	100
Other Humanities	14	54	194	-	-	16
Education	14	40	11,323	8	19	1,254
Business	46	4	4,503	30	4	635
Law	56	3	2,430	33	1	1,296
Other Professions	33	19	2,990	19	8	1,036
Social Work	9	49	712	4	22	133
Total	34	26	39,167	30	11	10,584
NA, A.P.I.			559	Excluded: Not yet Accepted to Grad. School Next Year & Planning G.S. Later		28,583
NA, Graduate Field			2,087	NA, Graduate Field		2,087
NA, Both			40	NA, A.P.I.		559
Excluded:				NA, Both		40
Not Going to Graduate School			12,383	Excluded: Not Going to Graduate School		12,383
NA, Plans			2,428	NA, Plans		2,428
Total Weighted N =			56,664	Total Weighted N =		56,664

TABLE 7.7 b)

Graph of Data for All Planning Graduate Study

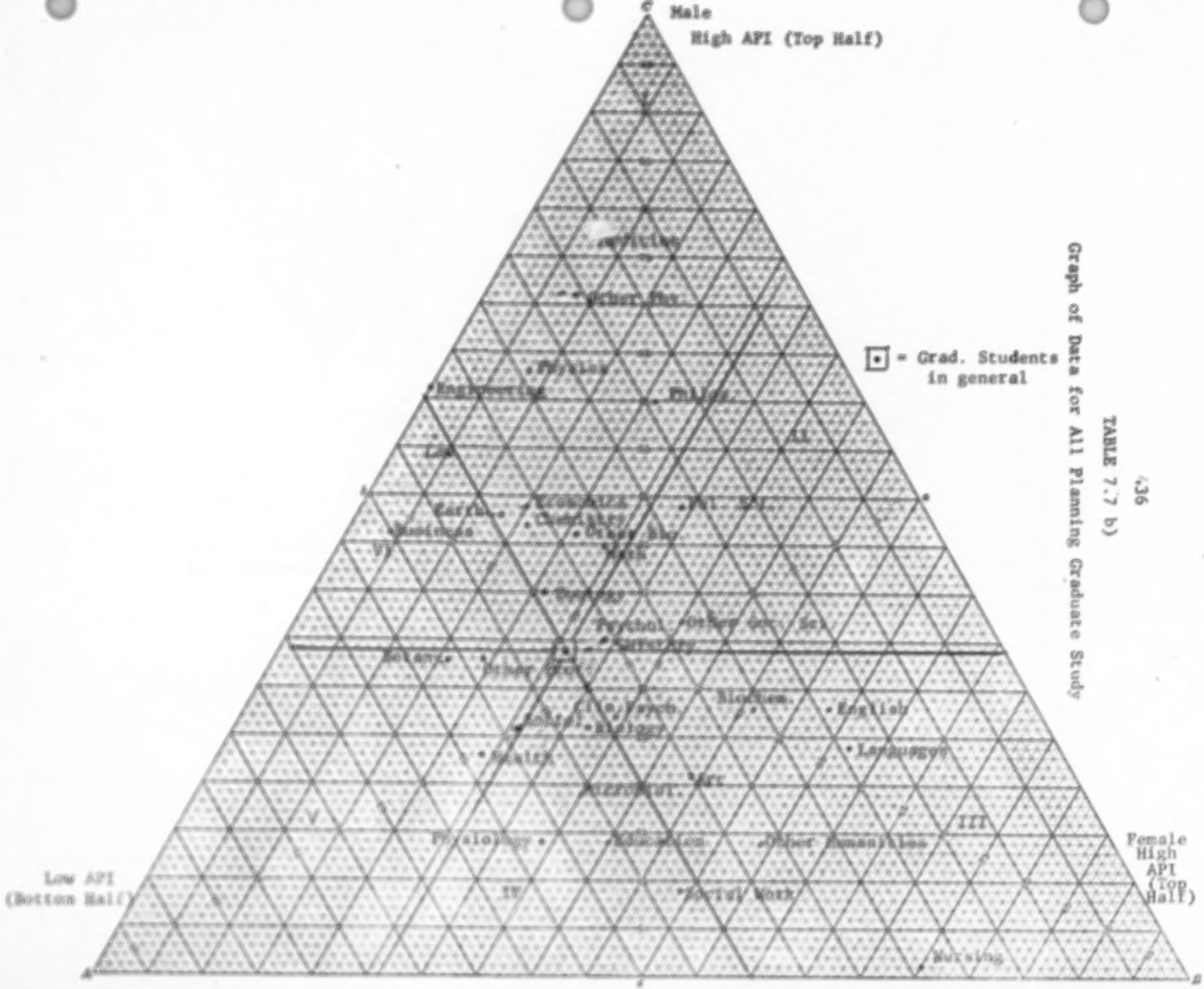
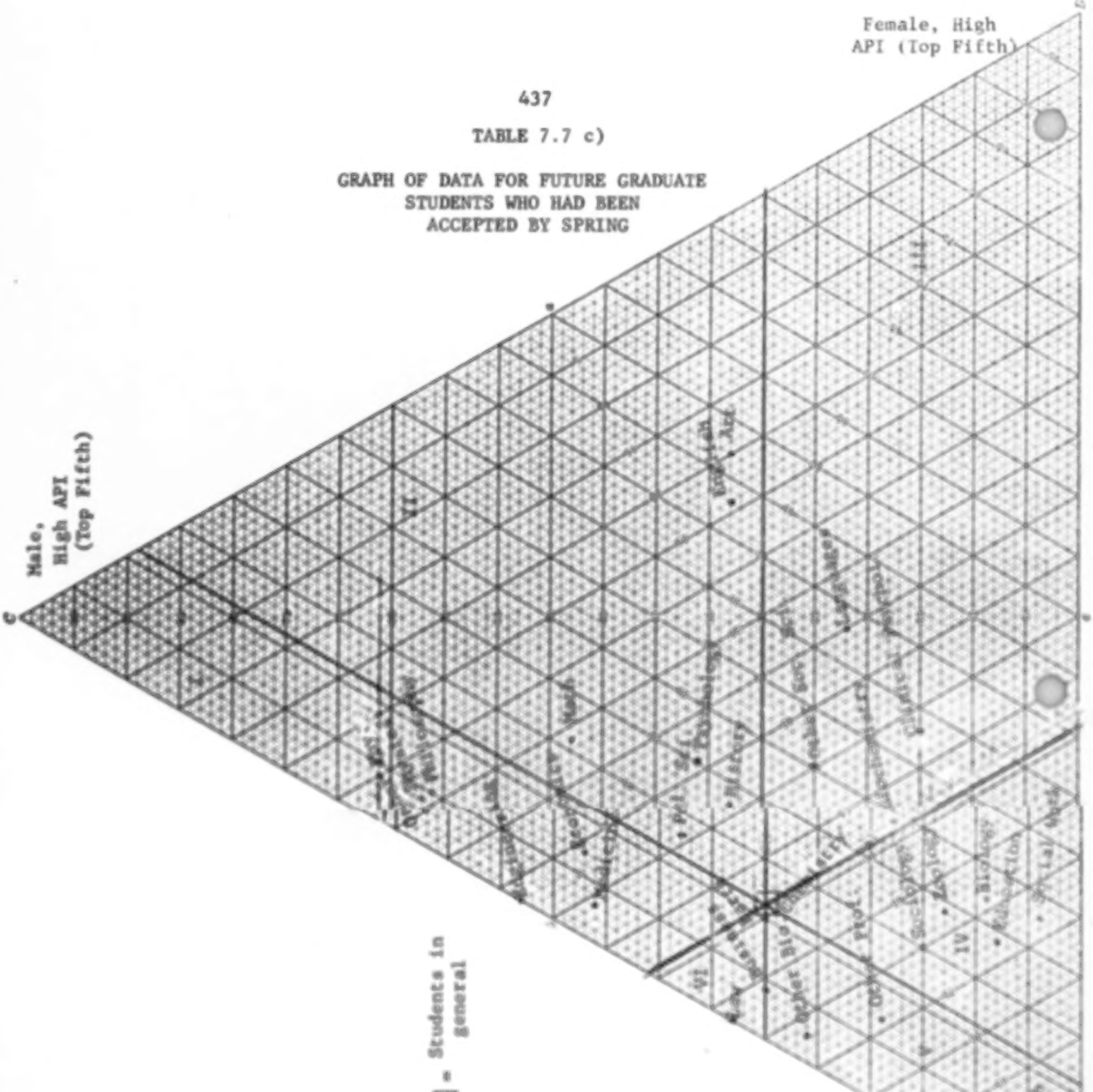


TABLE 7.7 c)

GRAPH OF DATA FOR FUTURE GRADUATE STUDENTS WHO HAD BEEN ACCEPTED BY SPRING



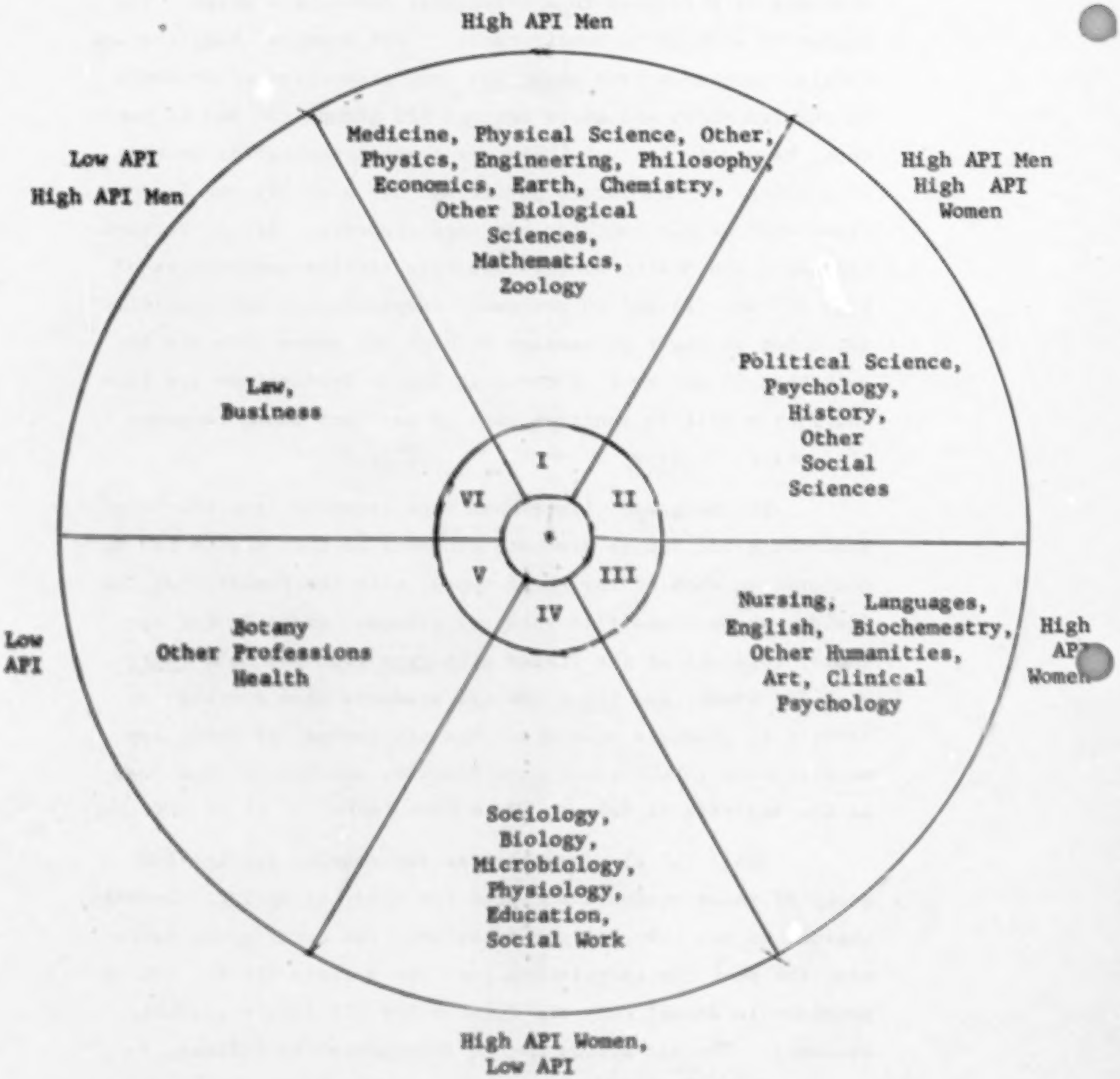
students is presented in a triangular coordinate graph. The degree of scatter is considerable. For example, Medicine and Foreign Languages have about the same proportion of students in the Top Fifth and Above Average API groups (84 and 81 per cent, respectively) but their sex composition varies so that 77 per cent of the future physicians are high API men in contrast with 24 per cent for Language students. Again, Foreign Languages and Health Professions have similar percentages of high API men (24 and 23 per cent, respectively) but they differ a lot in their percentage of high API women with the result that 53 per cent of those in Health Professions are from the Bottom Half in contrast with 19 per cent among Language students.

In the graph, lines have been extended from the point describing all future graduate students so that fields can be compared on each of the three types, with the result that the fields can be classified into six groups. Group I, for example, consists of the fields with more high API men, fewer high API women, and fewer low API students than a cross-section of graduate students. The six groups, in turn, can be presented in the clock face diagram, similar to that used in the analysis of values. [Data from Table 7.7 b) on next page.]

Table 7.7 c) gives similar information for the subgroup of those students accepted for study by Spring. Because, whether or not they all get to school, the total group represent the pool for recruitment into the various fields, let us consider in detail only the figures for all future graduate students. The six groups may be interpreted as follows:

Group I fields appear in many ways to be the most favorably situated in terms of their input, for compared with graduate students in general, they attract higher proportions of high API men, and lower proportions of low API students, hence more of their students have strong undergraduate records, and among the high performers, these fields run to men, rather than women.

Data from Table 7.7 b)


High API Men
Low API
High API Men
High API Men
High API Women
Medicine, Physical Science, Other, Physics, Engineering, Philosophy, Economics, Earth, Chemistry, Other Biological Sciences, Mathematics, Zoology
Law, Business
Political Science, Psychology, History, Other Social Sciences
I
VI
II
V
III
IV
Low API
Botany
Other Professions
Health
Nursing, Languages, English, Biochemestry, Other Humanities, Art, Clinical Psychology
High API Women
Sociology, Biology, Microbiology, Physiology, Education, Social Work
High API Women,
Low API

Group II fields are similarly well situated, having, like Group I fields, a high percentage of high API men, but differing in also having a high percentage of high API women.

Generally, however, these fields do have somewhat fewer high API men than Group I.

Group VI fields, Law and Business, also have a high percentage of high API men, but they have a relatively high percentage of Bottom Half API students in addition. That is, they gain their share of high performing men by having very few women, with the consequence that although their general API levels are not too impressive, they do have a high proportion of high API males.

Group III fields are characterized by superior API levels over all, but because they run rather feminine, they are low on high API males. For example, 81 per cent of the students in English are Top Fifth and Above Average in API, in contrast with 50 per cent of those in Business, but Business has a greater proportion of high performing men (46 versus 28) because so many high performing women are attracted to English.

Group V fields (Botany, Other Professions, and Health) have relatively fewer high API men, and relatively fewer high API women, and, in short, attract students disproportionately from the Bottom Half in API.

Group IV fields (Sociology, Biology, Microbiology, Physiology, Education, and Social Work) do the least well on the index, having relatively greater proportions of low API students, greater proportions of high API women, and lesser proportions of high API men.

It is odd to think that Business has "better" graduate students than English, and, of course, it does not, in terms of sheer academic performance, but if one asks how much of the graduate training will be applied in long-run careers by relatively able students, a case can be made that the graduate students in Business, even though a large number of mediocre academic performers are included, are a relatively promising lot, while the graduate students in English, bright as they may be in terms of undergraduate grades, include a worrisome proportion of women who may well be diverted from completion of their degrees or entrance into careers after graduate school.

Certainly, it is only "natural" that in feminine professions such as Art, Nursing, Education, and Social Work, high API men constitute small fractions. When, however, in Arts and Science fields less than one-third of the future graduate students in Botany, Sociology, Biology, Clinical Psychology, Biochemistry, English, Languages, Microbiology, Other Humanities, and Physiology, are men from the top half of their graduating classes, some question arises as to whether the process of recruitment to postgraduate Education is entirely efficient.

Background Characteristics

Tables 7.8, 7.9, and 7.10 distribute the future graduate students in terms of socio-economic status (SES) of their parental families, size of their hometown during high school days (Hometown), and the religion "in which you were reared."

In terms of SES (Table 7.8), the relatively high status origins of future lawyers and physicians, stand out here as in previous analyses. While API level of the aspirant M.D.'s was challenged when Arts and Science fields were broken down into subgroups, no other field is very close to Law and Medicine in terms of SES origins. Within the professional fields we again see the relatively lower SES origins of students in Education, Engineering, and Other Professions, as well as the relatively low SES origins of nurses.

Within the Arts and Science fields, the data are suggestive of greater differences between divisions than

TABLE 7.8

GRADUATE FIELD AND SES

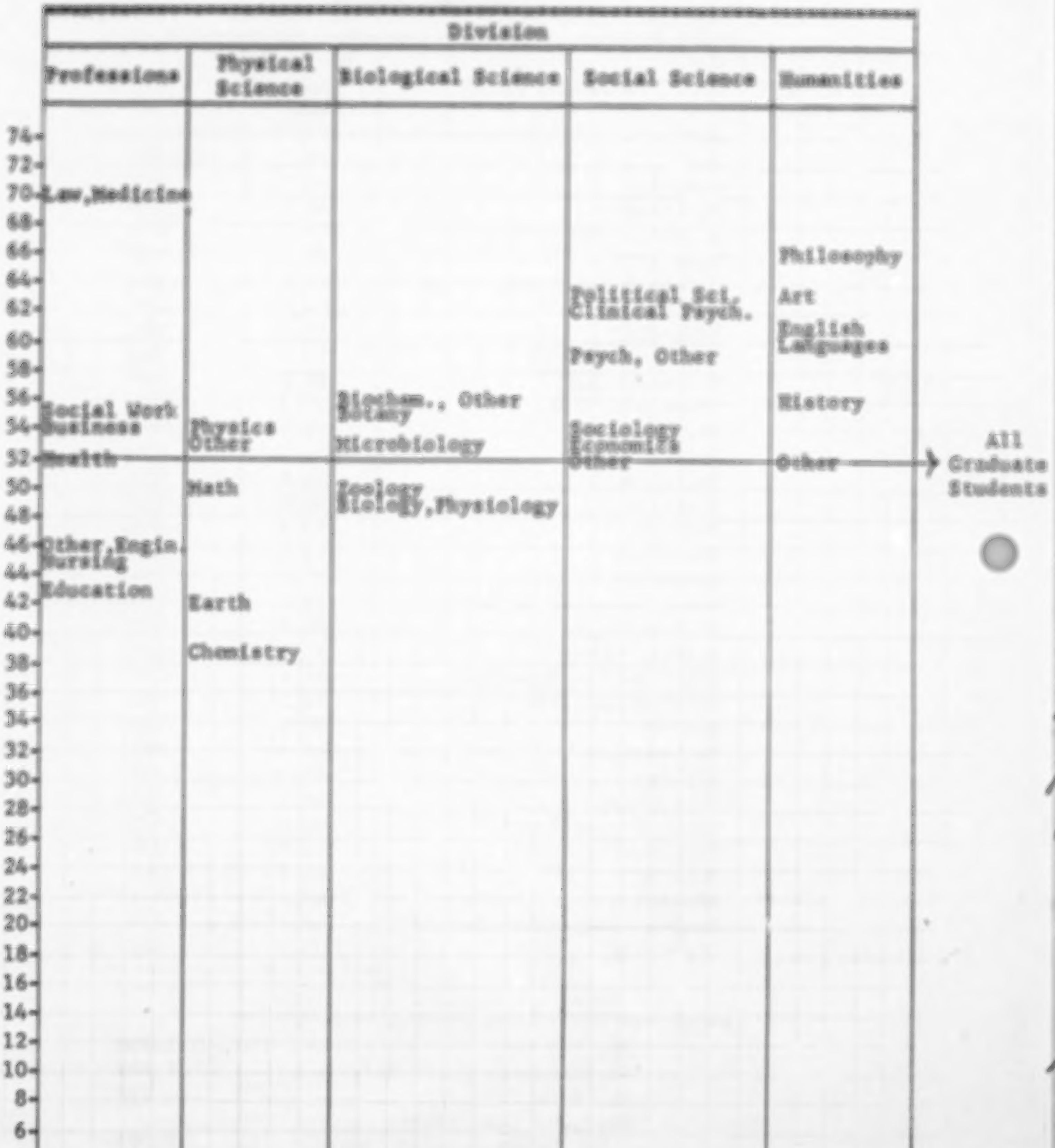
a) All Fields

Graduate Field	Per cent High SES*	N
Law	70.2	2,329
Medicine	69.7	1,392
Philosophy	66.2	195
Political Sciences	63.3	670
Fine Arts	62.6	1,338
Clinical Psychology	61.6	367
English	61.4	1,124
Languages	59.9	884
Other Psychology	59.3	263
Biochemistry	56.5	186
Other Bio. Sci.	56.3	288
History	56.3	1,066
Botany	55.4	101
Social Work	54.8	693
Business	54.2	4,334
Physics	53.9	698
Sociology	53.6	360
Economics	53.1	454
Other Physical Sciences	52.6	156
Microbiology	52.8	127
Health, Other	51.8	645
Other Social Sciences	51.6	274
Other Humanities	51.5	182
Zoology	50.0	146
Mathematics	49.9	879
Biology	49.3	335
Physiology	48.9	90
Other Professions	45.6	2,930
Engineering	45.6	2,938
Nursing	45.2	418
Education	43.2	11,036
Geology-Geography (Earth)	42.2	256
Chemistry	39.3	822
Total	51.5	37,776
NA, SES Only		1,950
NA, Graduate Field Only		1,989
NA, Both		138
Excluded from Table:		
Not Going to Grad. School		12,383
NA, Plans Only		2,428
Total Weighted N =		56,664

*High SES = cells (a), (b), (c), and (e) in Table 2.6 f).

TABLE 7.8--Continued

b) Grouped by Division
(Per cent High SES)



within them, a trend which first turned up in the analysis of career choices. In the Humanities and Social Sciences no field is below the percentage for all graduate students, while in the Biological Sciences three out of six, and in the Physical Sciences two out of five fields have lesser percentages of high SES students than graduate students in general. In particular, Chemistry (39 per cent high) and Earth Sciences (42 per cent high) have the lowest SES levels among the 33 fields in the table. At the top of the ladder, behind Law and Medicine, the next seven fields in proportion from high SES families are Humanities and Social Sciences (Philosophy, Political Science, Art, Clinical Psychology, English, Psychology, and Languages).

Turning to Hometown (Table 7.9) we find familiar trends, along with some new ones. As in the analysis of career choice, we note that Medicine and Law have high proportions from big cities, while other professions and Education are relatively small town fields. The large city trend for Social Science seems to apply for each of the fields, all six subgroups in Social Sciences being above graduate students in general in the percentage from big cities. While Biological Sciences as a group did not have a disproportionate small town trend, General Biology, Botany, and Other Biological Fields do recruit heavily from smaller cities. In fact, 52 per cent of the botanists and 40 per cent of the biologists come from towns of under 10,000 or rural areas, compared with 30 per cent of the graduate students in general. Biological Sciences are not thoroughly non-metropolitan, though, for biochemists, physiologists, and microbiologists have about the same proportion from larger cities as graduate students in general.

Finally, we note again that philosophers stand out as a distinctive group, 69 per cent being from larger cities, which makes them the most metropolitan field of all.

TABLE 7.9

GRADUATE FIELD AND HOMETOWN

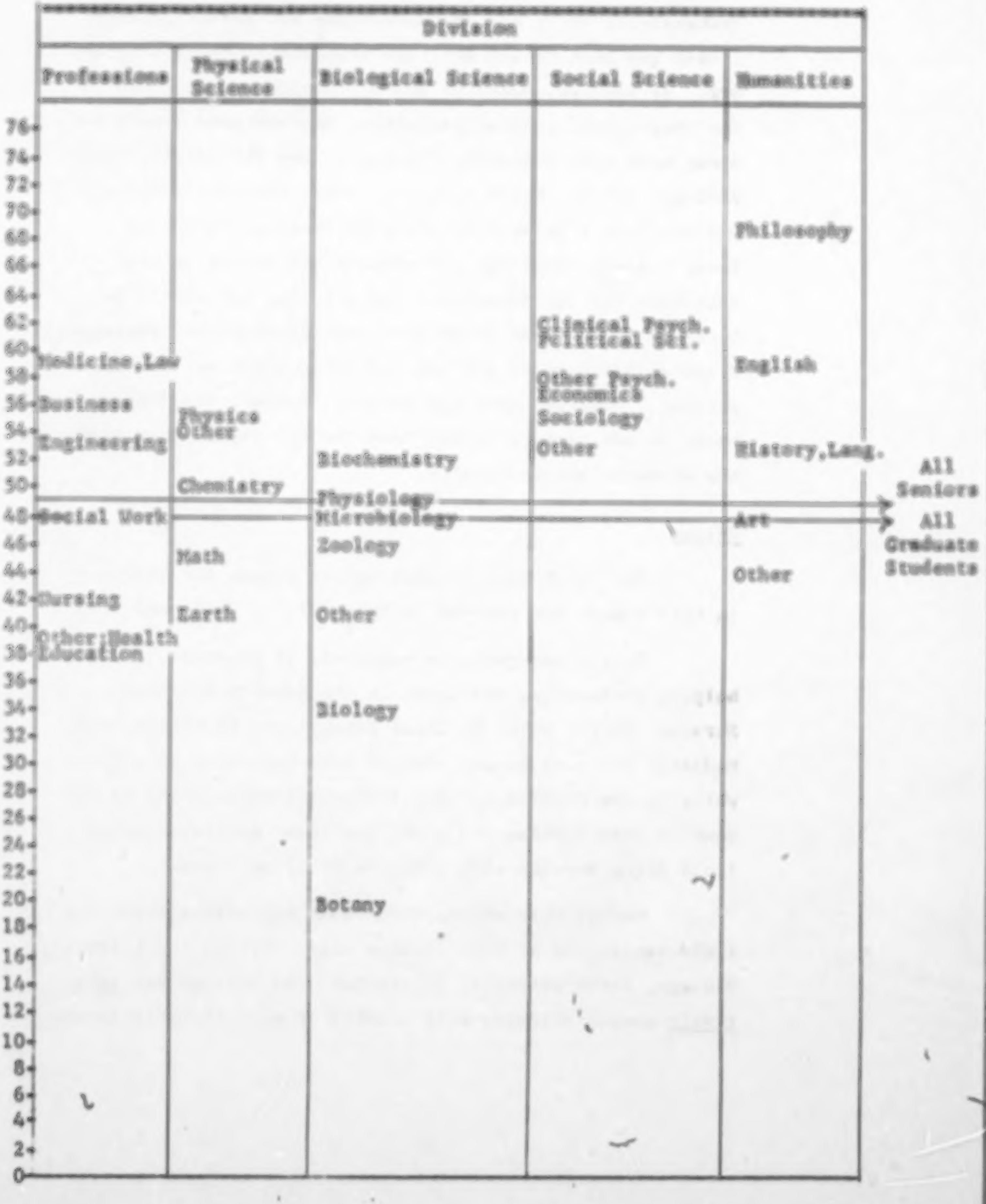
a) Size of Hometown

Graduate Field	Larger than 2 million	500,000-2 million	10,000-499,999	Less than 10,000 Farm	Total	
					Per cent	N
Chemistry	19.4	31.0	17.8	31.8	100.0	830
Physics	24.0	31.1	17.4	27.5	100.0	713
Geo.-Geol. (Earth)	13.4	27.6	20.7	38.3	100.0	261
Mathematics	20.4	25.0	21.0	33.6	100.0	889
Other Phy. Sciences	22.3	31.8	21.7	24.2	100.0	157
Engineering	22.6	30.8	19.5	27.2	100.1	2,992
Medicine	27.3	32.0	21.1	19.5	99.9	1,415
Nursing	15.6	26.4	27.9	30.0	99.9	416
Other Health	18.7	22.5	23.5	35.3	100.0	632
Biology	17.0	16.4	26.4	40.2	100.0	348
Biochemistry	21.7	30.6	18.3	29.4	100.0	180
Botany	2.9	17.1	27.6	52.4	100.0	105
Microbiology	18.9	29.1	18.9	33.1	100.0	127
Physiology	37.8	11.2	16.3	34.7	100.0	98
Zoology	19.0	27.2	21.8	32.0	100.0	147
Other Bio. Sci.	18.3	23.1	25.5	33.1	100.0	290
Clinical Psychology	33.5	29.0	15.8	21.7	100.0	373
Other Psychology	33.3	24.6	23.2	18.8	99.9	276
Economics	24.7	32.8	18.8	23.8	100.1	458
Political Science	28.4	32.2	19.0	20.4	100.0	686
Sociology	20.2	35.0	16.4	28.4	100.0	377
Other Soc. Sciences	22.1	31.2	17.9	28.8	100.0	285
Fine Arts	19.6	29.0	25.9	25.6	100.1	1,395
English	25.5	33.4	19.7	21.4	100.0	1,163
History	20.7	31.8	22.4	25.1	100.0	1,132
Language	21.8	31.0	22.2	24.9	99.9	715
Philosophy	23.9	44.8	11.9	19.4	100.0	201
Humanities, Other	13.4	30.5	30.0	26.2	100.1	187
Education	14.2	24.2	25.7	35.9	100.0	11,390
Business	25.2	30.8	22.7	21.4	100.1	4,465
Law	28.3	30.5	23.4	17.8	100.0	2,403
Social Work	14.7	33.1	26.3	25.8	99.9	712
Other Professions	14.5	24.8	23.1	37.6	100.0	2,974

N =	38,812
NA, Graduate Field	2,070
NA, Hometown	914
NA, Both	57
Excluded:	
Not Going to Graduate School	12,383
NA, Plans	2,428
Total Weighted N =	56,664

TABLE 7.9--Continued

b) Per cent from Hometowns of 100,000 or More, Grouped by Division



Original religion is reported in Tables 7.10 a) through 7.10 d). Again, many of the differences are familiar. The relatively Protestant fields are mostly sciences: Zoology, Botany, Biology, Earth Science, along with Other Professions; while all the Humanities and Social Sciences fields are less Protestant than graduate students in general, as are Law, Medicine and Biochemistry. In terms of the proportion of Roman Catholics, Biochemistry stands out, along with Law, Business, Economics, and Philosophy, while Zoology, Botany, Earth Sciences, Other Physical Sciences, and Art have a relatively low proportion of Catholics. These figures challenge any unqualified assertion that Catholics opt for Humanities and are less interested in Sciences. Jews tend disproportionately to choose Medicine, Clinical Psychology, and Law, patterns which are not surprising. However, save for Nursing, Botany, and Zoology, there do not seem to be any "non-Jewish" fields when graduate students are considered.

Values

The three occupational values chosen for analysis in this report are treated in Tables 7.11, 7.12, and 7.13.

People interest, as expected, is greatest in the helping professions and least in the Natural Sciences. Nursing, Social Work, Clinical Psychology, Education, and Medicine all have 66 per cent or more endorsing this item, while in the Natural Science fields and Engineering 43 per cent or less endorse the item, the least people-oriented field being Physics with a figure of 12 per cent.

Within this strong divisional difference there are field variations of considerable size. Within the Sciences, Biology, Earth Sciences, Physiology, and Zoology are *relatively* people-oriented with a third or more of their future

TABLE 7.10

GRADUATE FIELD AND ORIGINAL RELIGION

a) Original Religion

Graduate Field	Protes-tant	Roman Catholic	Jewish	None	Other	Total	
						Per cent	N
Chemistry . . .	53.4	32.2	9.1	4.0	1.2	99.9	831
Physics . . .	59.7	23.1	8.9	4.7	3.7	100.1	709
Geo.-Geol.(Earth)	72.6	16.2	5.0	2.7	3.5	100.0	259
Mathematics . .	60.8	23.6	10.8	3.4	1.4	100.0	886
Other Phy. Sci.	53.5	14.6	14.0	10.2	7.6	99.9	157
Engineering . .	56.7	27.0	7.9	4.2	4.3	100.1	2,993
Medicine . . .	47.0	27.0	21.2	2.4	2.4	100.0	1,416
Nursing	68.4	24.2	1.6	1.6	4.2	100.0	430
Other Health .	62.1	21.7	12.0	1.8	2.3	99.9	649
Biology	69.9	20.2	5.2	2.9	1.7	99.9	346
Biochemistry .	45.2	41.9	9.7	2.9	0.5	100.2	186
Botany	74.5	7.8	1.0	6.9	9.8	100.0	102
Microbiology .	64.6	21.5	11.5	2.3	0.0	99.9	130
Physiology . .	56.7	22.7	11.3	2.1	7.2	100.0	97
Zoology	81.5	11.6	2.1	2.1	2.7	100.0	146
Other Bio. Sci.	64.1	21.4	8.6	2.4	3.4	99.9	290
Clinical Psych.	55.9	21.0	20.2	2.4	0.5	100.0	372
Other Psychology	53.7	22.8	11.8	8.5	3.3	100.1	272
Economics . .	48.1	35.4	8.4	4.8	3.3	100.0	455
Political Sci..	52.2	30.9	9.5	4.4	2.9	99.9	683
Sociology . . .	58.9	23.7	11.3	2.2	4.0	100.1	372
Other Soc. Sci.	59.0	18.4	10.1	4.7	7.9	100.1	278
Fine Arts . .	67.6	16.2	9.6	4.1	2.7	100.2	1,396
English	53.3	31.3	11.2	1.8	2.4	100.0	1,165
History	58.2	28.7	7.1	3.0	3.0	100.0	1,127
Language . . .	51.8	30.6	9.2	5.5	3.0	100.1	710
Philosophy . .	45.0	35.4	12.1	3.0	4.5	100.0	198
Other Humanities	58.6	27.2	5.8	5.8	2.6	100.0	191
Education . . .	65.4	22.4	6.7	2.0	3.5	100.0	11,419
Business . . .	53.0	34.4	8.2	2.3	2.1	100.0	4,452
Law	43.5	35.1	17.5	2.5	1.5	100.1	2,388
Social Work . .	62.1	24.0	9.6	1.3	3.1	100.1	712
Other Professions	72.6	16.9	4.5	2.6	3.5	100.1	2,988

N = ...	38,805
NA, Graduate Field	2,064
NA, Religion	921
NA, Both	63
Excluded from Table:	
Not Going to Graduate School	12,383
NA, Plans	2,428
Total Weighted N = ...	56,664

TABLE 7.10--Continued

b) Per cent Protestant
(Original Religion)

	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
94-						
92-						
90-						
88-						
86-						
84-						
82-			Zoology			
80-						
78-						
76-						
74-			Botany			
72-	Other	Earth				
70-			Biology			
68-	Nursing				Art	
66-	Education		Microbiology Other			
64-						
62-	Soc. Work;Health					
60-		Math Physics				→ All Graduat Students and All Seniors
58-				Sociology;Other	Other History	
56-	Engineering		Physiology	Clinical Psych.		
54-	Business	Chem.;Other		Psych.,Other		
52-				Political Sci.	English Languages	
50-						
48-	Medicine			Economics		
46-			Biochemistry		Philosophy	
44-	Law					
42-						
40-						
38-						
36-						
34-						
32-						
30-						
28-						
26-						
24-						
22-						
20-						

TABLE 7.10--Continued

c) Per cent Catholic

(Original Religion)

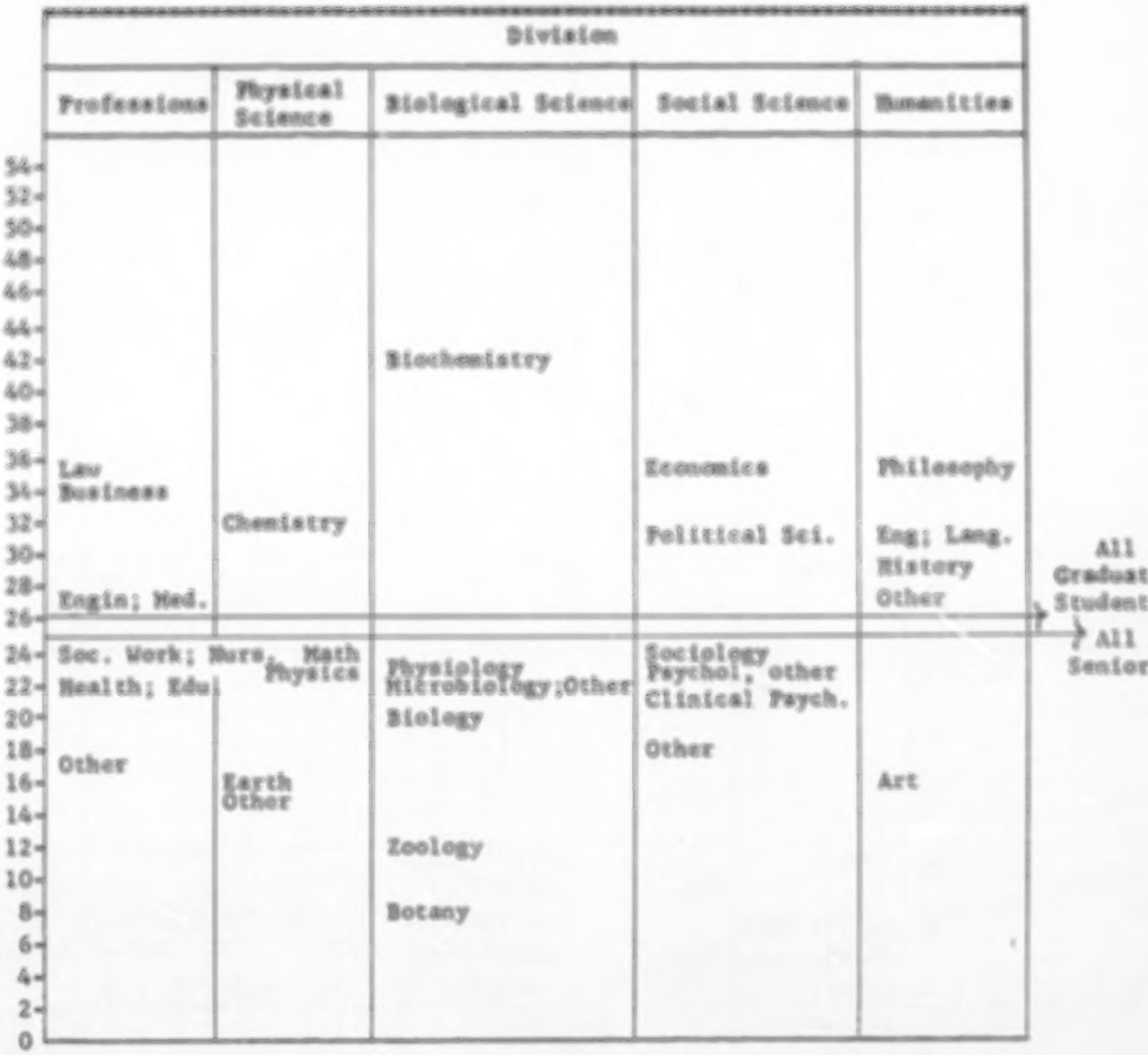


TABLE 7.10--Continued

d) Per cent Jewish

(Original Religion)

	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
40-						
38-						
36-						
34-						
32-						
30-						
28-						
26-						
24-						
22-						
	Medicine					
20-				Clinical Psych.		
18-	Law					
16-						
14-		Other				
12-	Health		Microbiology	Psych, other	Philosophy	
		Math	Physiology	Sociology	English	
10-	Social Work		Biochemistry	Poli.Sci; Other	Art	All
	Chemistry	Physics	Other		Languages	→ Graduate Students
8-	Engin; Bus.			Economics		→ All
	Education				History	Seniors
6-					Other	
		Earth	Biology			
4-	Other					
2-			Zoology			
	Nursing		Botany			
0						

TABLE 7.11

GRADUATE FIELD AND OCCUPATIONAL VALUES

a) Per cent Checking "Opportunity to Work with People Rather than Things"

Graduate Field*	Per cent	N	Grouped Graduate Field	Per cent	N
Nursing	82.0	438	Social Work	81.4	724
Social Work	81.4	724	Education	70.5	11,682
Clinical Psychology	76.0	375	Other Health	66.5	1,106
Education	70.4	11,682	Medicine	66.1	1,436
Medicine	66.1	1,436	Social Sciences	58.7	2,486
Sociology	64.1	379	Other Professions	58.4	3,037
Language	63.1	726	Law	58.2	2,455
History	58.9	1,142	Humanities	54.0	4,901
Other Professions	58.4	3,037	Business	53.2	4,557
Law	58.2	2,455	Biological Science	29.8	1,334
Political Science	58.1	689	Physical Science	20.3	2,914
English	58.0	1,199	Engineering	15.8	3,060
Other Health	56.3	668			
Other Social Sciences	55.6	288			
Other Humanities	54.7	201			
Business	53.2	4,557			
Other Psychology	49.8	285			
Economics	48.7	470			
Fine Arts	44.1	1,429			
Biology	43.2	363			
Geo.-Geol. (Earth)	40.8	272			
Philosophy	39.2	204			
Physiology	38.8	98			
Zoology	34.8	158			
Botany	29.2	106			
Mathematics	25.1	900			
Biochemistry	20.2	188			
Other Biological Sci.	20.1	289			
Other Physical Sciences	19.1	157			
Chemistry	16.0	864			
Microbiology	15.9	132			
Engineering	15.8	3,060			
Physics	11.9	721			
N =		39,692	N =		39,692
NA, Graduate Field Only		1,986			
NA, Values		34			
NA, Both		141			
Excluded:					
Not Going to Graduate School		12,383			
NA, Plans		2,428			
Total Weighted N =		56,664			

*Fields ordered on the basis of the per cent checking the given value.

TABLE 7.11--Continued

b) Grouped by Division

(Per cent "Work with People Rather Than Things")

	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
82	Nursing					
80	Social Work					
78						
76				Clinical Psych.		
74						
72						
70	Education					
68						
66	Medicine					
64				Sociology		
62					Language	
60						
58	Other; Law			Political Sci.	History English	
56	Health			Other	Other	All Seniors
54						Graduate Students
52	Business					
50				Psychology,oth. Economics		
48						
46						
44					Art	
42			Biology			
40		Earth				
38			Physiology		Philosophy	
36						
34			Zoology			
32						
30						
28			Botany			
26						
24		Math				
22						
20			Biochem; Other			
18		Other				
16	Engineering	Chemistry	Microbiology			
14						
12		Physics				
10						
8						
6						
4						
2						
0						

TABLE 7.12

GRADUATE FIELD AND OCCUPATIONAL VALUES

a) Per cent Checking "Opportunity to be Original and Creative"

Graduate Field*	Per cent	N	Grouped Graduate Field	Per cent	N
Fine Arts	87.0	1,429	Engineering	71.5	3,060
Physics	79.1	721	Humanities	70.8	4,901
English	77.1	1,199	Physical Science . .	66.3	2,914
Chemistry	72.1	864	Social Sciences . .	57.1	2,486
Engineering	71.5	3,060	Other Professions .	53.4	3,037
Other Humanities .	68.2	201	Biological Science .	51.6	1,334
Other Physical Sci.	67.5	157	Education	48.4	11,682
Philosophy	66.7	204	Law	42.9	2,455
Other Psychology .	64.6	285	Medicine	42.3	1,436
Language	62.3	726	Business	40.7	4,557
Botany	61.3	106	Social Work	37.8	724
Other Social Sci. .	61.1	288	Other Health	32.2	1,106
Political Science .	59.9	689			
Zoology	59.5	158			
Other Biological Sci.	59.2	289			
Clinical Psychology	58.9	375			
Mathematics	56.9	900			
Physiology	56.1	98			
Sociology	55.4	379			
Other Professions .	53.4	3,037			
Biochemistry . . .	52.1	188			
History	50.5	1,142			
Education	48.4	11,682			
Geo.-Geol. (Earth)	48.2	272			
Economics	45.7	470			
Microbiology . . .	44.7	132			
Law	42.9	2,455			
Medicine	42.3	1,436			
Business	40.7	4,557			
Biology	40.5	363			
Social Work	37.8	724			
Nursing	33.8	438			
Other Health . .	31.1	668			
N = ...		39,692	N = ...		39,692
NA, Graduate Field Only . . .		1,986			
NA, Values		34			
NA, Both		141			
Excluded from Table:					
Not Going to Graduate School		12,383			
NA, Plans		2,428			
Total Weighted N = ...		56,664			

*Fields ordered on the basis of the per cent checking the given value.

TABLE 7.12--Continued

b) Per cent"Original and Creative," Grouped by Division

	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
90-						
88-					Art	
86-						
84-						
82-						
80-		Physics				
78-					English	
76-						
74-						
72-	Engineering	Chemistry				
70-						
68-		Other			Other Philosophy	
66-				Psych, other		
64-						
62-					Languages	
60-			Botany Zoology Other	Other Political Sci. Clinical Psych.		
58-		Math				
56-			Physiology	Sociology		
54-	Other					Graduate Students
52-			Biochemistry			
50-					History	All Seniors
48-	Education	Earth				
46-			Microbiology	Economics		
44-						
42-	Law Medicine Business					
40-			Biology			
38-	Social Work					
36-						
34-	Nursing					
32-	Health					
30-						
28-						
26-						
24-						
22-						
20-						
18-						
16-						
14-						
12-						
10-						

TABLE 7.13

GRADUATE FIELD AND OCCUPATIONAL VALUES

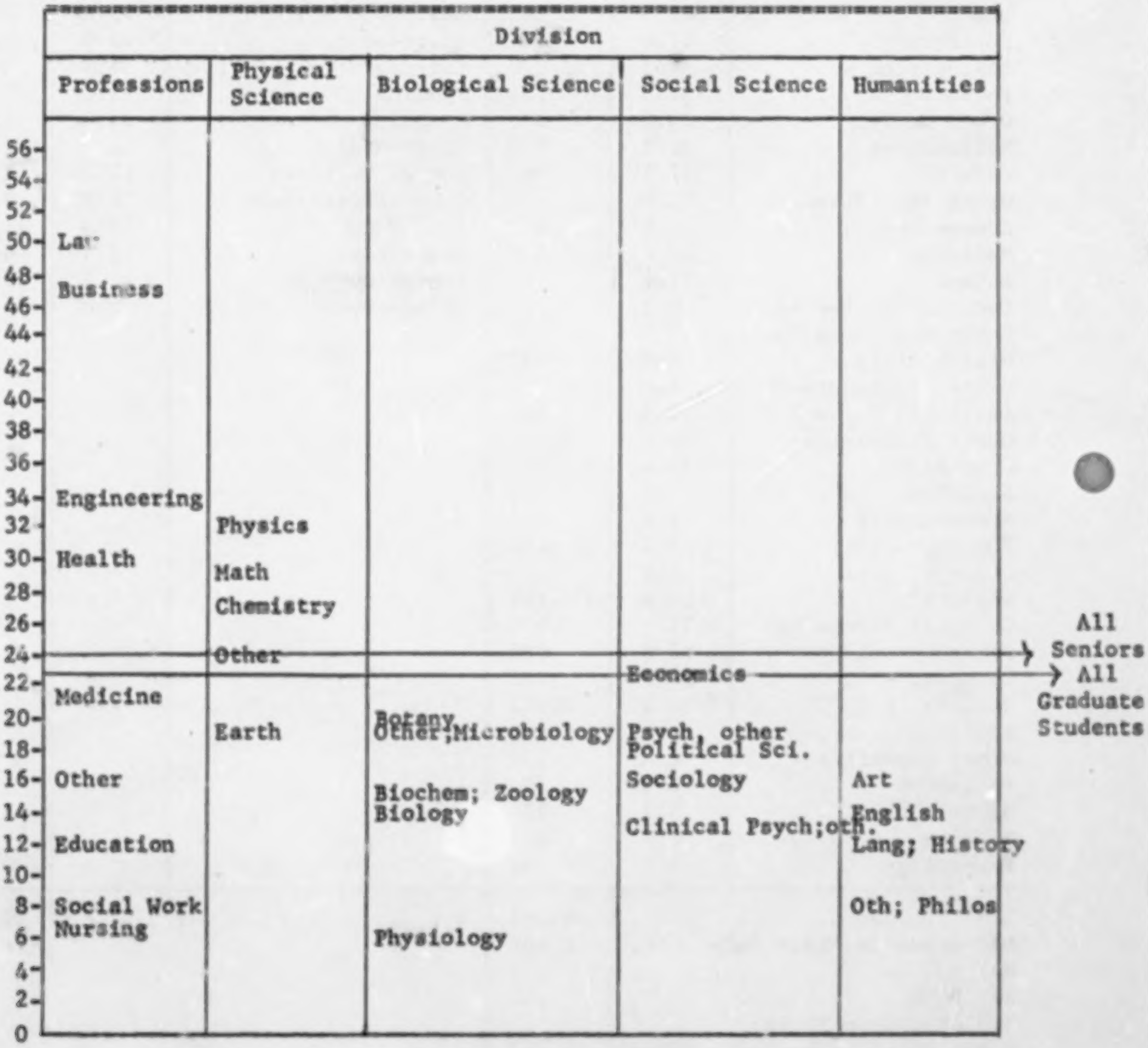
a) Per cent Checking "Making a Lot of Money"

Graduate Field*	Per cent	N	Grouped Graduate Field	Per cent	N
Law	49.6	2,455	Law	49.6	2,455
Business	47.0	4,557	Business	47.0	4,557
Engineering	34.5	3,060	Engineering	34.5	3,060
Physics	32.5	721	Physical Science .	28.0	2,914
Other Health . . .	29.8	668	Medicine	21.0	1,436
Mathematics	28.7	900	Other Health . . .	20.7	1,106
Chemistry . . .	27.3	864	Social Sciences . .	17.2	2,486
Other Phy. Sciences	23.6	157	Other Professions .	16.2	3,037
Economics	22.8	470	Bio. Science . . .	15.8	1,334
Medicine	21.0	1,436	Humanities	13.4	4,901
Botany	19.8	106	Education	12.1	11,682
Geo.-Geol. (Earth).	19.1	272	Social Work	8.0	724
Other Bio. Science.	19.0	289			
Microbiology . . .	18.9	132			
Other Psychology .	18.6	285			
Political Science .	17.9	689			
Other Professions .	16.2	3,037			
Fine Arts	15.8	1,429			
Sociology	15.6	379			
Biochemistry . . .	15.4	188			
Zoology	15.2	158			
Biology	14.0	363			
English	13.8	1,199			
Clinical Psychology	13.1	375			
Other Social Sci. .	12.8	283			
Language	12.5	726			
History	12.3	1,142			
Education	12.1	11,682			
Other Humanities .	8.5	201			
Philosophy	8.3	204			
Social Work	8.0	724			
Nursing	6.8	438			
Physiology	6.1	98			
N = ...		39,692	N = ...		39,692
NA, Graduate Field Only . . .		1,986			
NA, Values		34			
NA, Both		141			
Excluded from Table:					
Not Going to Graduate School		12,383			
NA, Plans		2,428			
Total Weighted N = ...		56,664			

*Fields ordered on the basis of the per cent checking the given value.

TABLE 7.13--Continued

b) Per cent "Making a Lot of Money"



graduate students endorsing the item. At the other extreme, less than 20 per cent of those in Other Physical Sciences, Chemistry, Microbiology, Engineering, and Physics endorsed the value.

Although the Social Sciences are distinctly people-oriented in comparison with the other Arts and Science fields, there is a percentage range by field from 49 to 76. Economists and psychologists other than Clinical are less people-oriented than graduate students in general, while clinical psychologists and sociologists are relatively high. Within the Humanities, the Language students are relatively people-oriented, and the artists and philosophers are not, the percentage of philosophers endorsing the value being lower than Biology and Earth Science. Again, the distinctive character of students in Philosophy stands out.

The item "Opportunities to be original and creative" also shows wide divisional differences along with considerable variation within a division. As in the previous analysis, Engineering, Physical Sciences, and Humanities are high on this indicator, while the professional fields are low. Within the Physical Sciences, however, it is Physics, Chemistry, and Other Physical Sciences which are particularly high, while Mathematics and Earth Sciences are close to graduate students in general. Biological Sciences and Social Sciences cluster near the line for all graduate students, but among them Psychology stands out as high, while Biology is low. Among the Humanities, History stands out as an exception, 50 per cent of the historians checking the item, putting them well below the next lowest Humanities field, Languages, where 62 per cent endorsed the response.

Table 7.13 confirms the impression that Law, Business, Engineering, Health Professions and the Physical Sciences have more students interested in making money, while all Biological Science, Social Science, and Humanities fields are at or below the 23 per cent line characterizing graduate students as a whole. It is worth noting that physicists have about the same percentage interested in making money as engineers, the difference between the two not being in acquisitiveness. We also note that while future physicians are below students in general on this item, they do surpass all of the Biological Science, Social Science and Humanities fields, except for Economics

Considering our new item, Conventionality (Table 7.14), there is a range from 23 per cent among the philosophers to 74 per cent among nurses. Except for Biology and Biochemistry (high for Arts and Science fields) and Engineering (low for professional fields), all Arts and Science fields are lower than all professions. Within the Arts and Science group there appears to be little divisional variation, but some spread within each division. Within Arts and Science the relatively "conventional" fields are: Biology, Biochemistry, Chemistry, Earth, Mathematics, Microbiology, Other Biological Sciences, Sociology, and History; the less conventional fields are: Physics, Physiology, Psychology, Clinical Psychology, Other Social Sciences, English, Art and Philosophy.

Turning finally to the question of political ideology, the differences appear to be divisional rather than intradivisional (Table 7.15). Social scientists are the most liberal politically, all fields surpassing graduate students in general; Humanities are similarly liberal, surpassing future graduate students in general, except for the Other Humanities. Scientific fields are considerably less liberal, all the Physical and Biological Science fields being the same or lower in liberalism than graduate students in general, except for the Earth Sciences. Within the

TABLE 7.14

GRADUATE FIELD AND ATTITUDES

a) Per cent Conventional

Graduate Field	Per cent	N
Chemistry	50.4	863
Physics	36.0	711
Geo.-Geol. (Earth) . .	49.8	271
Mathematics	49.1	897
Other Physical Sciences	42.4	158
Engineering	50.2	3,029
Medicine	51.7	1,430
Nursing	74.2	430
Other Health	61.9	651
Biology	55.5	344
Biochemistry	55.5	182
Botany	45.7	105
Microbiology	51.1	131
Physiology	38.8	98
Zoology	46.8	158
Other Biology	50.2	287
Clinical Psychology . .	31.6	373
Other Psychology . . .	35.9	281
Economics	42.5	445
Political Science . . .	41.9	677
Sociology	47.5	364
Other Social Sciences .	33.2	280
Fine Arts	36.0	1,413
English	37.0	1,177
History	50.2	1,124
Language	40.8	708
Philosophy	23.3	202
Other Humanities . . .	40.0	200
Education	64.7	11,275
Business	57.5	4,488
Law	51.2	2,415
Social Work	50.9	713
Other Professions . . .	54.0	2,974
N = ...		38,854
NA, Attitudes		872
NA, Graduate Field		2,033
NA, Both		94
Excluded from Table:		
Not Going to Graduate School . .		12,383
NA, Plans		2,428
Total Weighted N = ...		56,664

TABLE 7.14--Continued

b) Per cent Conventional, Grouped by Division

	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
76-						
74-	Nursing					
72-						
70-						
68-						
66-	Education					
64-						
62-	Health					
60-						
58-	Business					
56-			Biology; Biochem.			All Seniors
54-	Other					All Graduate Students
52-	Medicine Soc.Work; Law		Microbiology			
50-	Engineering	Chem; Earth	Other		History	
48-		Math	Zoology	Sociology		
46-			Botany			
44-						
42-		Other		Econ.; Poli. Sci.	Languages	
40-			Physiology		Other	
38-					English	
36-		Physics		Psych, other	Art	
34-				Other		
32-				Clinical Psych.		
30-						
28-						
26-						
24-					Philosophy	
22-						
20-						
18-						
16-						
14-						
12-						
10-						
8-						
6-						
4-						
2-						
0						

TABLE 7.15

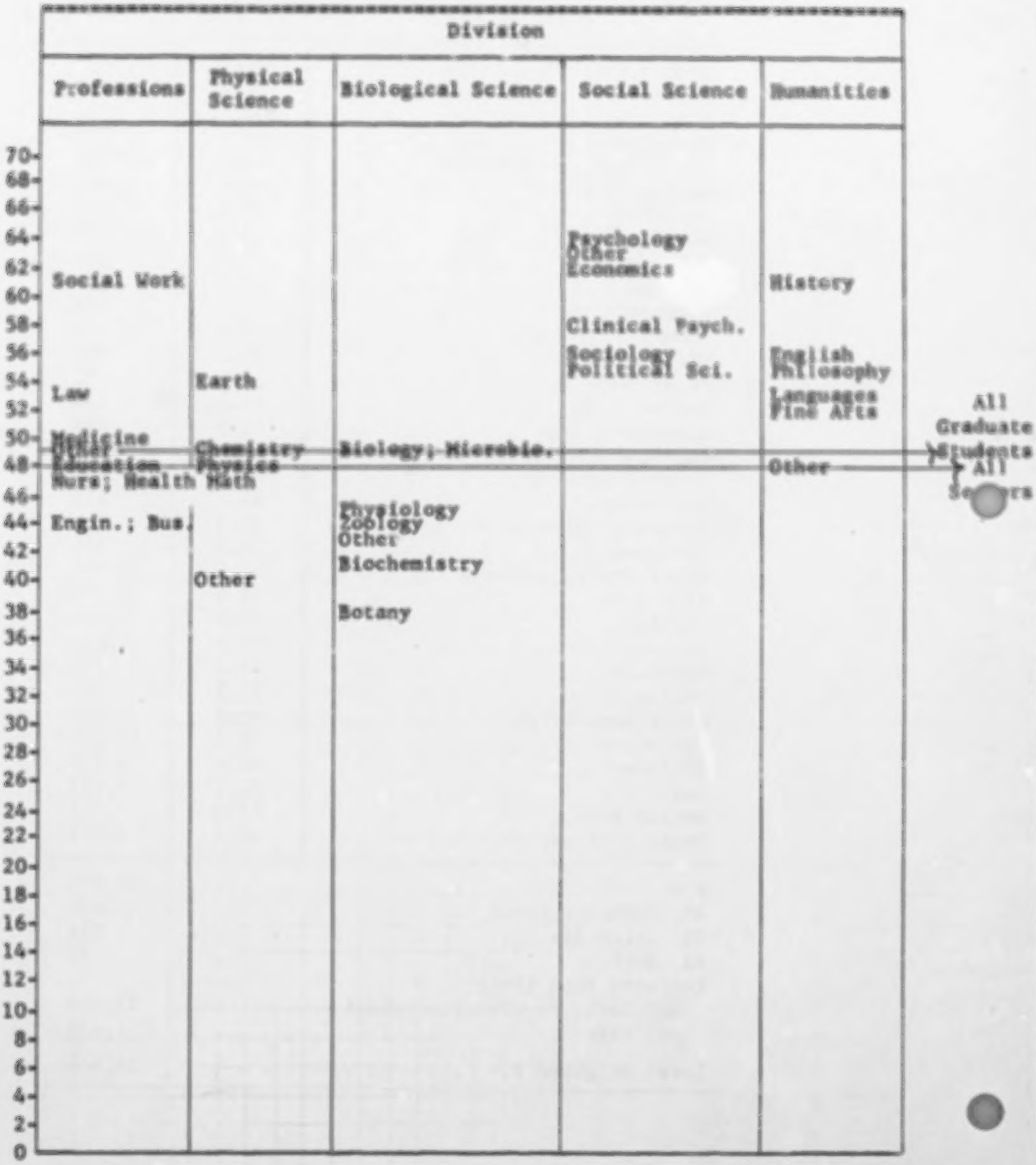
GRADUATE FIELD AND ATTITUDES

a) Per cent Liberal

Graduate Field	Per cent	N
Chemistry	49.4	851
Physics	47.9	725
Geo.-Geol. (Earth)	53.7	272
Mathematics	46.7	890
Other Physical Sciences	40.5	158
Engineering	44.2	3,019
Medicine	50.1	1,432
Nursing	47.1	425
Other Health	47.3	653
Biology	49.0	347
Biochemistry	41.0	188
Botany	38.0	100
Microbiology	49.2	132
Physiology	44.6	92
Zoology	44.3	158
Other Bio. Sci.	42.9	289
Clinical Psychology	57.9	373
Other Psychology	63.9	274
Economics	62.3	453
Political Science	55.3	680
Sociology	55.8	364
Other Social Sciences	63.0	281
Fine Arts	52.5	1,397
English	55.9	1,189
History	61.7	1,125
Language	53.2	712
Philosophy	55.2	203
Other Humanities	48.2	197
Education	48.3	11,291
Business	44.4	4,459
Law	53.1	2,431
Social Work	61.1	715
Other Professions	49.2	2,979
N = ...		38,854
NA, Graduate Field		2,034
NA, Attitudes		872
NA, Both		93
Excluded from Table:		
Not Going to Graduate School		12,383
NA, Plans		2,428
Total Weighted N = ...		56,664

TABLE 7.15--Continued

b) Per cent Liberal, Grouped by Division



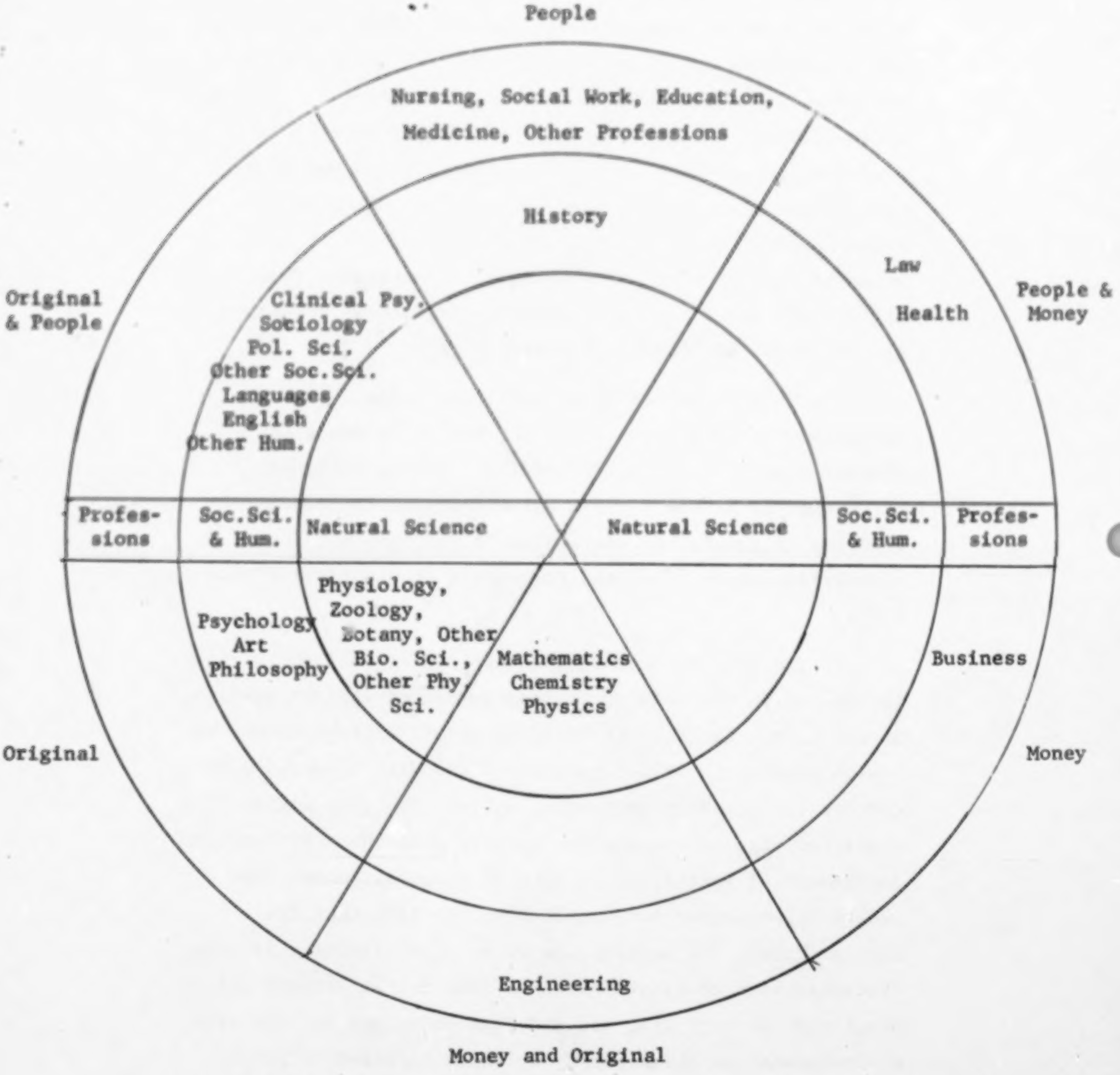
professional fields, social workers are quite politically liberal (61 per cent high on the item) and engineers and businessmen are the lowest professions. However, it should be noted that engineers and businessmen (among those anticipating graduate school, you will remember) are within five percentage points of graduate students in general. Putting it another way, while there are five fields which surpass students in general by ten per cent or more in the proportion of liberals (Social Work, Psychology, Other Social Sciences, Economics, History) there is only one, Botany, which is ten per cent below students in general. Thus, while there are a number of politically liberal graduate fields, there are few "un-liberal" ones.

The differences in occupational values may be summarized by locating each of the fields on the clock diagram used in Chaptems III and IV. Having a higher percentage endorsing a given value than future graduate students in general is defined as "plus," and all but six fields can be allocated to sectors of the clock (Table 7.16).

The results need little interpretation. Why History is located in the Hélping Profession sector appears puzzling at first, but later on in this chapter it will be shown that a high proportion of future history graduate students plan careers in secondary education, and the "helping pattern" is characteristic of educators. We also note that the frequent assignment of Psychology to Natural Science, rather than Social Sciences can be justified by the fact that their high original, low people, low money classification is more characteristic of Natural Science than Social Science fields. Similarly, we note that Art and Philosophy are set off from their Humanities neighbors by a lesser interest in people and hence a more purely intellectual orientation. Among

TABLE 7.16

CLASSIFICATION OF GRADUATE FIELDS ON VALUE TYPOLOGY


People
Nursing, Social Work, Education,
Medicine, Other Professions
History
Law
Health
People & Money
Original & People
Clinical Psy.
Sociology
Pol. Sci.
Other Soc.Sci.
Languages
English
Other Hum.
Profes-sions
Soc.Sci. & Hum.
Natural Science
Natural Science
Soc.Sci. & Hum.
Profes-sions
Physiology,
Zoology,
Botany, Other
Bio. Sci.,
Other Phy.
Sci.
Psychology
Art
Philosophy
Mathematics
Chemistry
Physics
Business
Original
Money
Engineering
Money and Original

Excluded: Biology, Biochemistry, Earth, Microbiology, Economics, Other Social Sciences.

the Natural Science fields we note that none of the Biological Sciences have the "achievement" pattern of high original, high money, low people, which is characteristic of Engineering, Mathematics, Chemistry, and Physics, although Physiology, Zoology, Botany, and Other Biological Sciences have the original only pattern characteristic of science fields. It is also interesting to note that the lesser interest in originality of Biology, Biochemistry, Earth Sciences, and Microbiology make them (---) on the typology and thus unclassifiable on this circle diagram.

In order to summarize the findings, the differentiating characteristics of each field will be reviewed, following the arbitrary rule that a field is "high" or "low" on a characteristic if it differs from future graduate students in general by 10 per cent or more in terms of the per cent possessing the characteristic.

Professional Fields

1) Medicine...high API, high Male, high SES, larger Hometown, low Protestant, high Jewish, high People, low Original.
2) Nursing...low Male, high People, low Original, low Money, high Conventional.
3) Engineering...high Male, low People, high Original, high Money.
4) Law...high Male, high SES, larger Hometown, low Protestant, low Original, high Money.
5) Other Professions...low API, and high Protestant.
6) Social Work...low API, low Male, high People, low Original, low Money, high Liberal.
7) Education...low API, low Male, smaller Hometown, high People, low Money, high Conventional.
8) Business...low API, high Male, low Original, high Money.
9) Health Professions (Other than Medicine and Nursing)...low API, low Original.

Natural Sciences

10) Physics...high API, high Male, low People, high Original, low Conventional.

11) Other Physical Sciences...low Catholic, low People, high Original, low Conventional.

12) Mathematics...high Male and low People.

13) Biochemistry...low Male, low Protestant, high Catholic, low People.

14) Microbiology...low Male, low People.

15) Chemistry...high Male, low SES, low People, high Original.

16) Zoology...high Protestant, low People.

17) Other Biological Sciences...low API, low People.

18) Physiology...low API, low People, low Money, low Conventional.

19) Earth...low API, high Male, high Protestant, low Catholic.

20) Botany...low API, high Male, smaller Hometown, high Protestant, low Catholic, low People, low Original, low Liberal.

21) Biology...low API, smaller Hometown, high Protestant, low Catholic, low People, low Original.

Social Sciences and Humanities

22) English...high API, low Male, larger Hometown, high Original, low Conventional.

23) Philosophy...high API, high Male, high SES, larger Hometown, low Protestant, low People, high Original, low Money, low Conventional.

24) Languages...low Male, low Money, low Conventional.

25) Political Science...high SES, larger Hometown, low Conventional.

26) Clinical Psychology...high SES, larger Hometown, high Jewish, high People, low Money, low Conventional.

27) Psychology other than Clinical... larger Hometown, high Original, low Conventional, high Liberal.

28) History...low Money, high Liberal.

29) Other Social Sciences...low Money, low Conventional, high Liberal.

30) Economics...high Male, low People, low Conventional, high Liberal.

31) Art...low Male, high SES, low Catholic, low People, high Original, low Conventional.

32) Sociology...low API, high People.

33) Humanities,Other...low API, low Male, high Original, low Money, low Conventional.

Academic Plans

In June, 1961, when the questionnaires were completed, none of the students had entered graduate study (although 14 per cent reported taking one or more graduate courses while undergraduates--RSS). Data on actual rates of entry and reactions to graduate study will have to come from NORC's continuing follow-up study of the sample. Information is available, though, on the students' plans and on the anticipated financial situations of those planning to go on immediately. In this section we shall review, field by field, the available information on these matters.

Postponement

Perhaps the single most important fact of the survey is that 45 per cent of the sample and 58 per cent of those anticipating graduate study fell into the group called "Later" on the Plans Index. We have previously noted that in fields where graduate study is essential for entry, postponement is rare, while in fields where postgraduate study is more of an option, rates of postponement are higher. The data on future graduate students enable us to examine postponement for a more detailed breakdown of fields [Table 7.17 a)].

While the professional fields show both the highest (79 per cent for Nursing) and lowest (11 per cent for Medicine) rates for postponement, the Arts and Science fields generally range from 35 to 65 per cent of the future graduate students planning to begin their studies after Fall, 1961. Within the Arts and Sciences, higher rates of postponement are found for Other Humanities, Biology, Sociology, Art, English, History, Earth, Mathematics, Psychology, and Economics, all of which have more than 50 per cent postponement; while at the other extreme, Physiology, Physics, Zoology, Botany, and Philosophy have postponement rates of less than 40 per cent.

The very strong association between plans and API has been noted already, and is spelled out in detail in Table 7.18 a). For example, while 54 per cent of the historians are postponing studies, the percentages are 36 per cent among the top fifth in API, 50 per cent among above average, and 76 per cent among those from the bottom half. Except for Social Work and Health Professions, the relationships are quite strong. However, as in the case of the analysis of broad groups of fields in Chapter VI, API does not explain differences in postponement rates. In Table 7.18 b) the postponement rate for each field is plotted against the postponement which would be expected if the field consisted of equal proportions from the three API groups, a way of controlling for API. The correlation is very high, which means that we get essentially the same rank of postponement when API is controlled. A hand drawn line has been passed through the points where the raw and adjusted figures are identical. Any field lying well above the line can be interpreted as one where low API levels contribute to postponement, any point below the line can be interpreted as indicating high API levels bringing down the

TABLE 7.17

GRADUATE FIELD AND PLANS INDEX

a) Graduate Field, Graduate Plans and Acceptance Status

Graduate Field*	Per cent Planning to Go to Graduate School--		Total		Per cent Planning to Go to Graduate School Next Fall and Accepted
	Next Fall	Later	Per cent	N	
Medicine	88	12	100	1,440	79
Physiology	76	24	100	98	45
Other Health	68	32	100	669	55
Law	68	32	100	2,456	53
Zoology	65	35	100	158	46
Physics	64	36	100	727	50
Botany	63	37	100	106	46
Philosophy	62	38	100	205	49
Other Bio. Sci.	60	40	100	290	47
Chemistry	59	41	100	864	50
Language	58	42	100	726	41
Other Physical Sciences.	58	42	100	158	38
Clinical Psychology . .	55	45	100	375	36
Other Social Sciences .	52	49	101	288	33
Biochemistry	51	49	100	188	39
Other Professions . . .	50	50	100	3,038	34
Political Science . . .	50	50	100	690	37
Geo.-Geol. (Earth) . . .	47	53	100	272	30
Other Psychology	47	53	100	285	33
Economics	47	53	100	470	33
Mathematics	46	54	100	902	30
English	46	54	100	1,201	31
Microbiology	45	55	100	132	34
History	45	55	100	1,142	28
Engineer	45	55	100	3,060	26
Fine Arts	43	57	100	1,429	24
Sociology	40	60	100	379	26
Biology	40	60	100	363	18
Social Work	33	67	100	724	19
Business	30	70	100	4,561	14
Education	29	71	100	11,691	11
Other Humanities	27	73	100	201	8
Nursing	18	82	100	438	6
N = ...				39,726	
NA, Graduate Field				2,127	
Excluded from Table:					
Not Going to Graduate School				12,383	
NA, Plans				2,428	
Total Weighted N = ...				56,664	

*Ordered on the basis of per cent planning graduate school in the Fall.

TABLE 7.17--Continued

b) Per cent Later on Plans, Grouped by Division

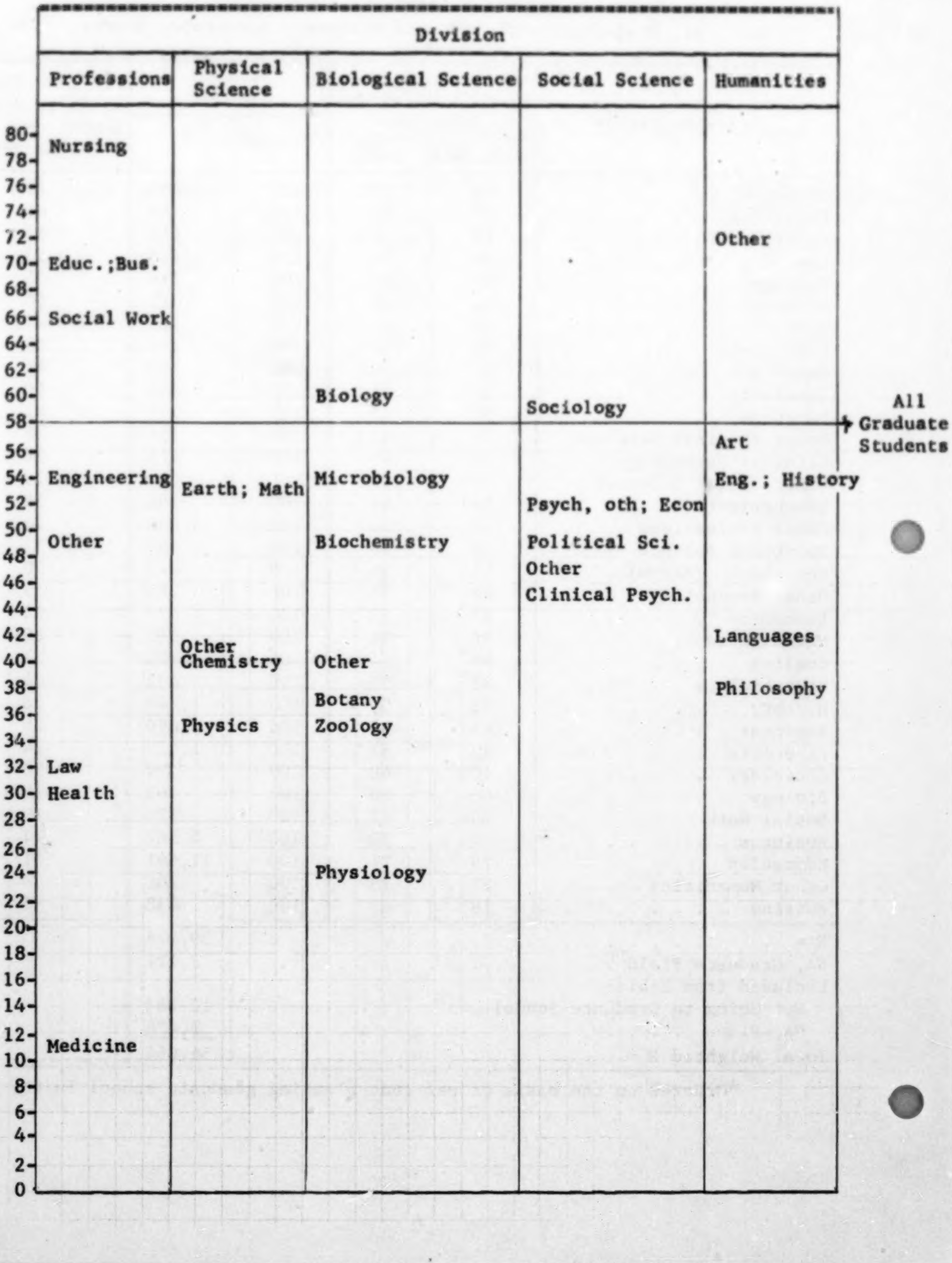


TABLE 7.18

GRADUATE FIELD, A P I., AND POSTPONEMENT OF GRADUATE STUDIES

a) Per cent of Each A.P.I. Group Planning Graduate School Later

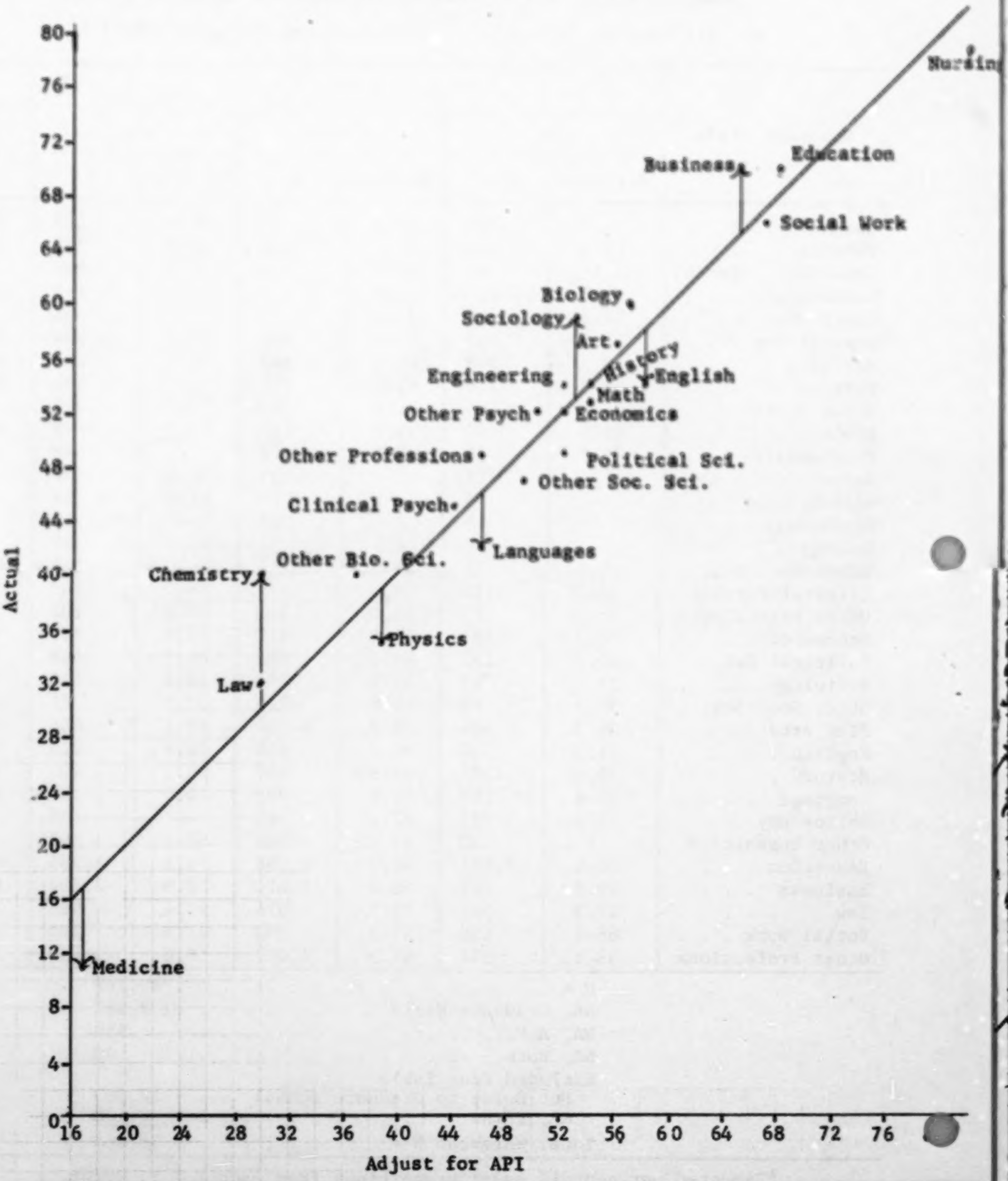
Graduate Field	A.P.I.						Adjusted for A.P.I.*
	High		Medium		Low		
	Per cent	N	Per cent	N	Per cent	N	
Chemistry	19.4	222	37.5	320	59.0	315	29.5
Physics	15.1	304	33.5	206	67.5	209	38.7
Geo.-Geol. (Earth)	-	47	52.1	119	69.6	102	-
Mathematics . . .	32.3	297	55.4	316	75.9	282	54.5
Other Phy. Sci. .	17.6	51	37.3	67	-	31	-
Engineering . . .	27.2	743	55.0	1,127	72.4	1,153	51.5
Medicine	3.7	598	11.6	603	35.7	221	17.0
Nursing	68.6	118	85.8	204	91.5	106	82.0
Other Health . .	-	43	35.0	263	27.8	349	-
Biology	46.0	50	55.0	160	70.3	148	57.1
Biochemistry . .	36.7	60	35.9	78	-	49	-
Botany	-	17	-	31	38.5	52	-
Microbiology . .	-	35	-	36	61.0	59	-
Physiology . . .	-	18	-	27	-	47	-
Zoology	-	38	28.1	57	45.9	61	-
Other Bio. Sci. .	28.1	57	35.1	94	46.6	131	36.6
Clinical Psychol.	34.2	111	38.5	117	58.0	143	43.6
Other Psychology.	25.3	79	55.0	100	69.6	102	50.0
Economics	32.3	127	51.8	170	70.6	167	51.6
Political Sci. .	40.2	251	48.3	281	68.9	148	52.5
Sociology	37.1	62	43.6	133	78.6	178	53.1
Other Soc. Sci. .	38.5	78	46.8	126	60.5	81	48.9
Fine Arts	39.3	354	58.8	558	69.1	486	55.7
English	41.3	520	63.6	440	68.4	225	57.8
History	36.4	327	49.6	407	75.5	400	53.8
Language	30.4	289	46.1	293	60.6	137	45.7
Philosophy . . .	7.2	83	62.6	83	-	38	-
Other Humanities.	-	30	65.7	102	88.7	62	-
Education	61.5	1,571	68.3	4,596	75.1	5,356	68.3
Business	49.9	595	66.2	1,674	78.9	2,234	65.0
Law	17.3	571	27.7	874	45.4	985	30.1
Social Work . . .	68.3	120	55.3	293	77.6	299	67.1
Other Professions	33.3	531	47.3	1,027	56.8	1,432	45.8

N = ...	39,167
NA, Graduate Field	2,087
NA, A.P.I.	559
NA, Both	40
Excluded from Table:	
Not Going to Graduate School . . .	12,383
NA, Plans	2,428
Total Weighted N = ...	56,664

*Expected per cent if equal proportions from each A.P.I. group.

TABLE 7.18--Continued

b) Actual and Adjusted Postponement Rates*



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*Excluded because of small case base: Earth. Other Phy. Sci.,Health, Botany, Zoology, Microbiology, Physiology, Philosophy, Other Humanities, and Biochemistry.

rate of postponement. The discrepancies are few, but Chemistry, Sociology, and Business do lie four points or more above the line, indicating some of the postponement in these fields comes from low API; while Medicine, Physics, Languages, and English lie four or more points below the line, and hence receive some additional "boost" from their high API levels.

Because of the great field variations in sex and API and the correlation between sex and API, it is difficult to find sufficient fields with enough cases in each subgroup to examine field differences in postponement when sex and API are both controlled. Table 7.19 a) gives detailed information for 33 fields. For the 11 fields with sufficient cases, Table 7.19 b) plots raw postponement figures against the rates to be expected if each field were composed of equal proportions of high API men, above average API men, bottom half men, high API women, and above average API women. As in the case of API, the ranks are very similar for the raw and adjusted figures.

In sum, the field differences in postponement of graduate studies are not to be explained by variations in their sex or API composition. Let us then examine the rates of postponement for the strategic group of men from the top fifth in API (Table 7.20). Because of small sample sizes all of the Biological Science fields had to be combined and a number of fields were excluded from the table, but the results are clear. While the high API men have much lower rates of postponement than future graduate students in general, delay in beginning graduate studies is still considerable in this group. Except for Philosophy and Physics, between 15 and 32 per cent of the high API men are postponing their studies in the Arts and Science fields in the table, a figure indicative of considerable inefficiency in graduate school recruitment.

TABLE 7.19

GRADUATE FIELD AND PLANS, CONTROLLING FOR SEX AND API

a) Per cent Postponing Graduate Studies, Among Those Planning to Go to Graduate School

Graduate Field*	Male						Female					
	A.P.I.						A.P.I.					
	Top Fifth		Above Average		Bottom Half		Top Fifth		Above Average		Bottom Half	
	Per cent	N	Per cent	N	Per cent	N	Per cent	N	Per cent	N	Per cent	N
Medicine	3	555	8	546	32	191	-	43	47	57	-	30
Physiology	-	5	-	9	-	33	-	13	-	18	-	14
Other Health . . .	-	26	25	124	31	257	-	17	44	139	18	92
Law	17	547	27	816	45	957	-	24	38	58	-	28
Zoology	-	16	-	47	-	45	-	22	-	10	-	16
Physics	12	276	33	180	68	206	-	28	-	26	-	3
Botany	-	13	-	22	-	42	-	4	-	9	-	10
Philosophy	4	70	47	53	-	31	-	13	-	30	-	7
Other Bio. Sci. .	-	35	27	55	43	99	-	22	-	39	-	32
Chemistry	16	164	31	237	57	284	28	58	57	83	-	31
Languages	24	88	38	84	69	52	33	201	49	209	55	85
Other Phy. Sci. .	-	48	33	58	-	30	-	3	-	9	-	1
Clinical Psychol..	-	28	25	73	58	106	40	83	-	44	-	37
Other Soc. Sci. .	-	40	40	65	66	61	-	38	54	61	-	20
Biochemistry . . .	-	17	-	35	-	15	-	43	-	43	-	34
Other Professions.	26	316	37	683	50	1,066	44	215	68	344	77	366
Political Science.	32	168	51	167	67	115	57	83	45	114	-	33
Geo.-Geol. (Earth)	-	29	53	101	62	76	-	18	-	18	-	26
Other Psychology .	-	43	36	55	66	77	-	36	-	45	-	25
Economics	23	92	47	134	70	158	-	35	-	36	-	9
Mathematics . . .	18	185	45	216	76	241	55	112	77	100	-	41
English	23	164	50	173	54	79	50	356	72	267	76	146
Microbiology . . .	-	7	-	18	-	35	-	28	-	18	-	24
History	29	164	42	228	73	294	44	163	60	179	82	106
Engineering . . .	27	740	55	1,114	72	1,147	-	3	-	13	-	6
Fine Arts	29	111	51	187	65	212	44	243	63	371	73	274
Sociology	-	20	33	78	74	113	-	42	58	55	86	65
Biology	-	14	49	80	70	116	-	36	61	80	-	32
Social Work . . .	-	13	-	49	61	88	69	107	61	244	84	211
Business	51	529	66	1,542	80	2,083	44	66	67	132	62	151
Education	47	309	58	1,268	72	2,450	65	1,262	72	3,328	78	2,906
Other Humanities .	-	7	-	20	-	29	-	23	65	82	-	33
Nursing	-	2	-	1	-	2	69	116	86	203	93	104

N = ...	39,167
NA, Graduate Field	2,087
NA, API	559
NA, Both	40
Excluded from Table:	
Not Going to Graduate School	12,383
NA, Plans	2,428
Total Weighted N = ...	56,664

*Ranked by per cent planning graduate school next Fall.

TABLE 7.19--Continued

b) Per cent Postponing Graduate Studies, Actual and Adjusted for Sex and API

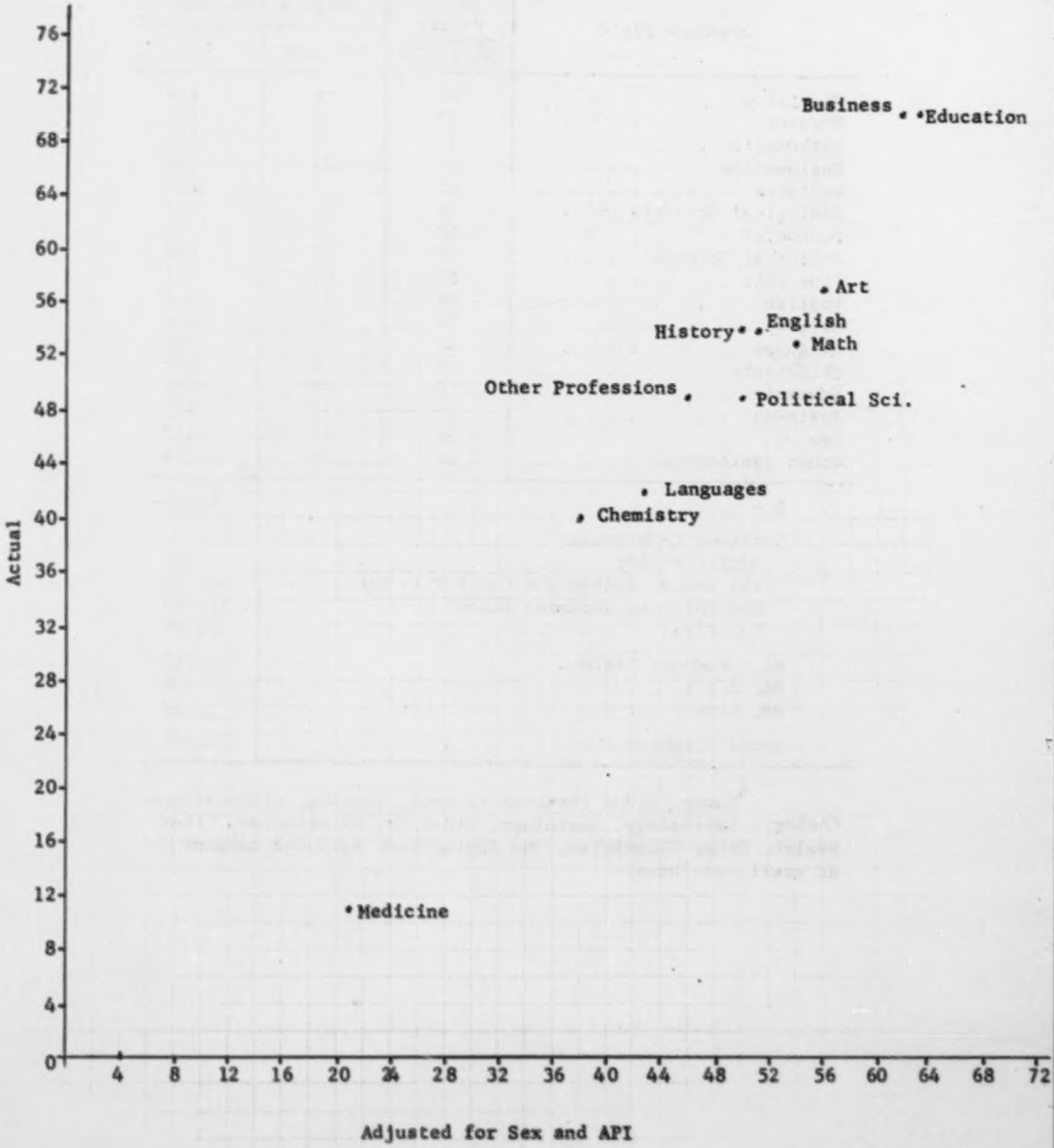

TABLE 7.20

GRADUATE FIELD AND PLANS, CONTROLLING FOR SEX AND A.P.I.

a) Per cent Postponing Graduate Studies

Graduate Field	All Future Graduate Students	High A.P.I. Men	
		Per cent	N
Chemistry	40	16	164
Physics	35	12	276
Mathematics	53	18	185
Engineering	54	27	740
Medicine	11	3	555
Biological Sciences (All)	46	16	107
Economics	52	23	92
Political Science	49	32	168
Fine Arts	57	29	111
English	54	23	164
History	54	29	164
Language	42	24	88
Philosophy	38	4	70
Education	70	47	309
Business	70	51	529
Law	32	17	547
Other Professions	49	26	316

N =	4,585
Excluded from Table:	
*Other Fields	256
All Women, Medium and Low A.P.I. Men	34,326
Not Going to Graduate School	12,383
NA, Plans	2,428
NA, Graduate Field	2,087
NA, A.P.I.	559
NA, Both	40
Total Weighted N =	56,664

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*Earth, Other Physical Science, Nursing, Clinical Psychology, Psychology, Sociology, Other Social Sciences, Other Health, Other Humanities, and Social Work excluded because of small case base.

TABLE 7.20--Continued

b) Per cent Postponing Graduate Studies Among High API Males, Grouped by Division

	Division				
	Professions	Physical Science	Biological Science	Social Science	Humanities
60					
58					
56					
54					
52					
	Business				
50					
48					
	Education				
46					
44					
42					
40					
38					
36					
34					
32				Political Sci.	
					History
30					
					Art
28					
	Engineering				
26	Other Profs.				
24					Languages
				Economics	English
22					
20					
18		Math			
	Law				
16		Chemistry	All Bio. Sci.		
14					
12		Physics			
10					
8					
6					
4					Philosophy
	Medicine				
2					
0					

When one turns to the reasons given for not going on, as an aid in explaining field differences in postponement, they turn out to be of little help. Table 7.21 gives the per cent who are postponing their studies and who give selected reasons. There is surprisingly little field difference. Of the 231 percentages in the table, there are only six entries where a given field exceeds the figure for all graduate students by 10 per cent or more. Nursing and Education stand out on practical experience; Other Humanities and Biology on financial obstacles; Other Humanities on "Tired of being a student," and Business on military service.

Putting it another way, the fields with high rates of postponement do not have spectacularly high percentages for any particular reason, rather they are a little higher on each of a number of reasons.

When one considers how the fields vary in length of training, financing of training, competition for places in graduate school, and career structures, it is surprising that sharper differences do not turn up in the reasons given by those who are postponing. Beyond the obvious fact that the fields with more men (Business, Political Science, Law, Engineering, Economics) are higher on military service as a reason, the reasons analysis sheds little light on the problem.

In summary:

1) Fifty-eight per cent of the students who anticipate graduate study did not plan to be in graduate school in Fall,1961.

2) Specific fields vary in their postponement rates from 11 per cent for Medicine to more than two-thirds in Social Work, Education, Business, Other Humanities, and Nursing; with the great bulk of the fields falling between 30 and 60 per cent.

3) Differences in sex and API composition do not explain the field variation in postponement, although they add or subtract to the rates for different fields.

TABLE 7.21

GRADUATE FIELD AND REASONS FOR NOT PLANNING GRADUATE STUDY NEXT FALL

Graduate Field	Per cent Postponing	Reasons*							N	Average No. of Reasons from Complete Set of 12 Checked by Postponers
		Practical Experience	Financial Obstacles	Tired of Being a Student	Family Responsibilities	Good Job	Military Service	Low Grades		
Nursing	79	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.6	3.9	435	1.83
Other Humanities	72	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.0	5.1	197	2.12
Education	70	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3.2	3.5	11,559	1.78
Business	70	21.2	[illegible]	13.3	[illegible]	[illegible]	[illegible]	[illegible]	4,495	1.81
Social Work	66	[illegible]	[illegible]	[illegible]	[illegible]	4.8	1.6	[illegible]	709	1.83
Biology	60	[illegible]	[illegible]	6.1	6.1	[illegible]	2.0	3.1	358	1.68
Sociology	59	[illegible]	[illegible]	[illegible]	9.7	9.1	5.1	[illegible]	373	1.92
Fine Arts	57	23.8	[illegible]	12.9	6.2	7.9	4.6	4.9	1,425	1.70
Engineering	54	22.0	20.1	[illegible]	[illegible]	8.6	[illegible]	[illegible]	3,025	1.99
English	54	22.2	[illegible]	[illegible]	7.9	7.2	2.4	2.4	1,191	1.77
Microbiology	54	19.2	13.8	8.5	5.4	[illegible]	[illegible]	[illegible]	130	1.91
History	54	20.9	[illegible]	[illegible]	7.4	5.8	[illegible]	3.9	1,114	1.76
Mathematics	53	15.7	17.8	[illegible]	8.3	8.2	[illegible]	[illegible]	888	1.91
Geo.-Geol. (Earth)	53	21.6	[illegible]	10.8	[illegible]	6.7	[illegible]	3.0	269	1.84
Economics	52	16.2	18.1	12.2	9.0	4.1	[illegible]	5.5	469	1.65
Psychology	52	20.2	20.2	[illegible]	9.6	5.7	[illegible]	4.6	282	1.99
Political Science	49	16.1	18.9	13.5	4.5	6.5	[illegible]	4.8	682	1.80
Other Professions	49	22.3	20.4	9.5	9.1	6.8	6.9	4.3	3,004	1.36
Biochemistry	49	[illegible]	[illegible]	[illegible]	4.3	5.9	4.3	[illegible]	187	1.90
Other Social Sciences	47	18.3	[illegible]	13.0	[illegible]	4.9	3.9	3.5	284	1.84
Clinical Psychology	45	12.6	20.9	12.8	9.9	8.0	7.2	[illegible]	374	2.03
Languages	42	17.9	17.1	[illegible]	6.2	4.9	3.6	1.7	715	1.80
Other Physical Sci.	41	18.5	17.2	8.3	10.2	8.3	[illegible]	3.2	157	1.74
Chemistry	40	13.4	17.4	10.3	7.4	3.8	7.2	[illegible]	860	1.93
Other Bio. Sci.	40	13.1	19.0	12.8	9.3	5.2	6.9	[illegible]	289	2.07
Philosophy	38	13.7	15.6	8.8	8.8	2.0	5.4	2.4	205	1.84
Botany	37	11.3	18.9	3.8	4.7	1.9	2.8	4.7	106	1.45
Zoology	35	12.0	13.9	10.8	7.6	3.2	3.2	[illegible]	158	1.97
Physics	35	10.3	14.6	10.4	5.7	3.8	5.4	[illegible]	717	1.81
Law	32	5.2	13.6	5.9	5.1	2.3	[illegible]	3.8	2,442	1.78
Health	30	11.9	12.1	6.6	3.8	6.6	4.7	2.8	654	1.80
Physiology	24	17.3	12.2	2.0	3.1	1.0	1.0	[illegible]	98	2.25
Medicine	11	1.3	3.7	1.4	0.8	1.4	0.8	3.4	1,430	1.57
Total		24.2	21.2	13.6	10.7	9.1	7.4	5.5	39,281	
NA, Graduate Field									2,078	
NA, Reasons for Not Going									445	
NA, Both									49	
Excluded from Table:										
Not Going to Graduate School									12,383	
NA, Plans									2,428	
Total Weighted N =									56,664	

*Shading identifies cells above the average for future graduate students in general.

4) For the Arts and Science fields with sufficient cases to tabulate, nine out of 11 fields have postponement rates of 15 per cent for men in the top fifth in API.

5) Students in fields with high postponement rates do not differ in the kinds of reasons for postponement when compared with those in low postponement rate fields. That is, they do not cite different obstacles, merely more obstacles.

Stipends and Finances

Except in the sense that public colleges are heavily subsidized from tax funds and private schools receive gifts and grants so that students do not pay the full cost of study, undergraduate training is not heavily subsidized in modern America. As a benchmark figure, about 20 per cent (RSS) of the seniors reported receiving a scholarship at any time during their undergraduate studies.

When we turn to advanced study, rates of stipend help are generally higher, but we shall see wide differences between fields of study because the level of stipend support for graduate study does not represent the application of any general national policy, but stems from the individual decisions of graduate schools, graduate departments, foundations, Federal agencies, and individual donors.

Table 7.22 a) summarizes, by field, the results of the questions on stipends, among those students who expected to begin advanced study in Fall, 1961. Considering first the expectation of any stipend, regardless of type, Table 7.22 b) shows striking differences. While over all 42 per cent expected something, the range is from 78 in Chemistry to eight in Nursing. The major patterns are these:

1) Although there are some Arts and Science fields with lower stipend rates than some professions, generally speaking, Arts and Science students have a distinct advantage in securing financial aid. All the fields with 40 per cent or more expecting

TABLE 7.22

GRADUATE FIELD AND STIPENDS

a) Graduate Field, Stipend Application Status and Stipend Type (Among Those Going to Graduate School Next Year)

Graduate Field	Did Not Apply	Type of Stipend Received (Among Those Who Applied)								Total		Per cent Expecting a Stipend Next Year
		Scholarship		Fellowship		Assistantship		None of This Type	Don't Know Yet			
		Part Tuition	Full Tuition	Tuition Plus Less Than $1,000	Tuition Plus Greater Than or Equal to $1,000	Teaching	Research			Per cent	N	
Chemistry	18.4	0.8	9.8	1.0	18.8	58.2	5.9	1.0	2.5	116.4	512	78.1
Physics	21.0	0.9	13.3	1.7	23.6	39.1	9.2	6.2	5.6	120.6	467	67.2
Geo.-Geol. (Earth) .	36.2	-	3.2	-	9.4	37.0	6.3	7.9	7.1	107.1	127	48.8
Mathematics	36.1	1.0	6.7	1.4	16.6	24.3	5.1	4.1	11.1	106.4	415	48.7
Other Phy. Sci. . . .	28.3	3.3	7.6	-	23.9	7.6	30.4	8.7	4.3	114.1	92	58.7
Engineering	49.0	1.5	5.8	1.4	13.5	12.6	12.3	5.8	6.0	107.9	1,373	39.2
Medicine	68.4	8.3	3.9	0.3	0.9	0.6	1.0	5.6	12.7	101.7	1,258	13.3
Nursing	81.8	-	6.5	-	2.6	-	-	1.3	9.1	101.3	77	7.8
Other Health	72.3	7.3	1.5	1.5	3.5	0.9	0.4	3.5	9.7	100.6	455	14.5
Biology	57.9	0.7	3.4	-	11.0	18.6	2.1	0.7	9.0	103.4	145	32.4
Biochemistry	16.7	4.2	14.6	2.1	18.6	22.9	30.2	2.1	6.3	117.7	96	74.9
Botany	43.3	-	-	1.5	9.0	16.4	23.9	1.5	10.4	106.0	67	44.8
Microbiology	25.0	-	3.3	-	28.3	28.3	11.7	6.7	1.7	105.0	60	66.6
Physiology	58.1	-	4.1	1.4	16.2	10.8	10.8	5.4	-	106.8	74	36.5
Zoology	24.5	5.9	2.0	2.0	7.8	37.3	16.7	5.9	9.8	111.9	102	59.8
Other Bio. Sci. . . .	33.3	-	4.1	1.8	24.6	8.2	21.6	0.6	14.0	108.2	171	52.1
Clinical Psychology..	40.3	5.8	1.5	-	15.0	6.8	19.9	1.9	20.9	112.1	206	36.9
Other Psychology . .	30.6	0.7	5.2	3.7	20.9	14.9	16.4	4.5	13.4	110.3	134	51.5
Economics	41.7	2.2	3.6	5.4	24.7	5.4	4.5	8.1	7.6	103.2	223	42.6
Political Science . .	42.1	6.4	7.9	5.0	11.4	5.3	4.4	12.0	9.9	104.4	342	36.0
Sociology	47.4	0.7	2.0	0.7	15.1	17.1	13.8	7.2	10.5	114.5	152	34.9
Other Soc. Sci. . . .	50.0	3.3	4.0	4.7	15.3	6.7	5.3	11.3	6.0	106.6	150	32.7
Fine Arts	56.7	5.7	5.2	1.8	6.0	11.4	0.7	6.0	13.8	107.3	614	23.5
English	38.5	2.6	7.5	3.3	16.3	13.7	0.6	12.5	8.4	103.4	546	40.6

TABLE 7.22 a)--Continued

Graduate Field	Did Not Apply	Type of Stipend Received (Among Those Who Applied)								Total		Per cent Expecting a Stipend Next Year
		Scholarship		Fellowship		Assistantship		None of This Type	Don't Know Yet			
		Part Tuition	Full Tuition	Tuition Plus Less Than $1,000	Tuition Plus Greater Than or Equal to $1,000	Teaching	Research			Per cent	N	
History	48.8	5.3	4.7	3.9	17.6	6.6	0.2	8.6	7.8	103.5	512	34.8
Languages	38.3	3.4	7.9	2.4	17.2	12.7	1.9	10.3	12.9	107.0	418	38.5
Philosophy	33.1	3.9	7.9	3.9	26.0	3.9	2.4	10.2	9.4	100.7	127	47.3
Other Humanities . . .	60.0	-	10.9	-	5.5	-	1.8	12.7	9.1	100.0	55	18.2
Education	79.2	2.8	2.3	1.0	2.7	5.0	0.2	4.4	4.4	102.0	3,414	12.0
Business	74.5	2.0	3.9	2.2	2.4	3.2	3.8	4.9	5.8	102.7	1,355	14.8
Law	72.0	5.0	7.2	2.2	0.4	0.4	0.5	6.4	7.4	101.5	1,655	14.2
Social Work	44.7	3.8	10.0	7.1	13.8	1.7	0.4	0.4	23.8	105.7	239	31.1
Other Professions . .	53.8	8.8	9.3	4.2	5.3	4.6	5.8	5.2	7.7	104.7	1,513	33.3
Total	42.0	3.7	5.1	1.9	7.5	8.7	4.0	6.5	8.6	..	17,146	42.9
NA, Graduate Field											436	
NA, Stipend Type											72	
NA, Both											1	
Excluded from Table:												
Planning Graduate School Later											24,198	
Not Going to Graduate School											12,383	
NA, Plans											2,428	
Total Weighted N = ...											56,664	

TABLE 7.22--Continued

b) Per cent Expecting a Stipend Among Those Going to Graduate School Next Year, Grouped by Division

	Division					
	Professions	Physical Science	Biological Science	Social Science	Humanities	
78		Chemistry				
75			Biochemistry			
67		Physics	Microbiology			
60			Zoology			
59		Other				
52			Other	Other Psych.		
49		Earth; Math				
47					Philosophy	
45			Botany			
43				Economics		All Next Year
41					English	
39	Engineering					
38					Languages	
37				Clinical Psych.		
36			Physiology	Political Sci.		
35				Sociology	History	
33	Other			Other		
32			Biology			
31	Social Work					
24					Art	
18					Other	
15	Business					
14	Health; Law					
13	Medicine					
12	Education					
8	Nursing					

TABLE 7.22--Continued

c) Graduate Field and Stipend Type: Summary

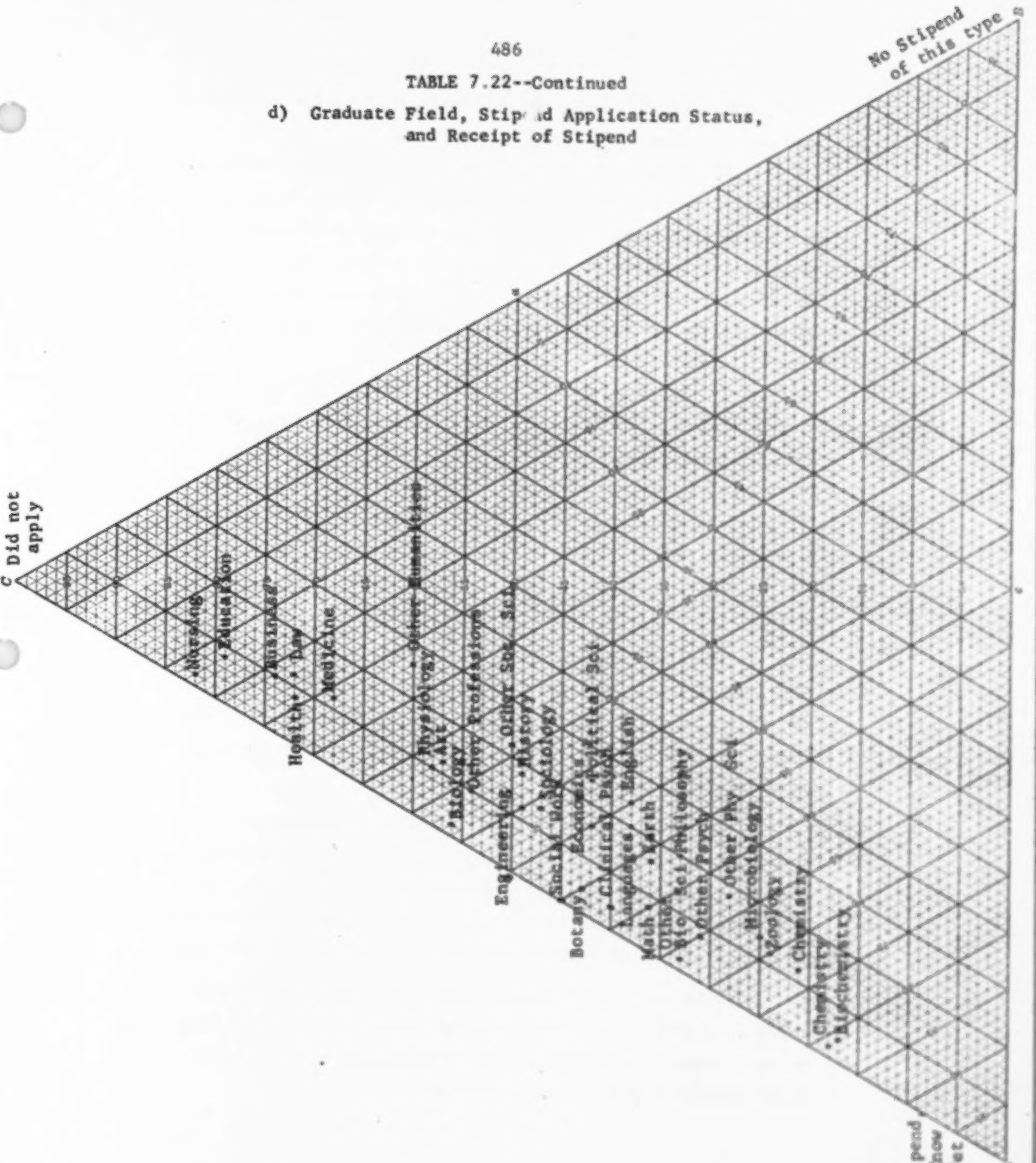
Any Stipend	RA	TA	Fellow	Fields
+	+	+	+	Biochemistry
+	+	-	+	Other Physical Sciences; Other Bio. Sciences; Clinical Psychology
+	+	+	-	Botany
+	+	-	-	-
+	-	+	+	Microbiology; Physics; Psychology; Sociology
+	-	-	+	Philosophy; Economics; English; Languages; Physiology; History
+	-	+	-	Chemistry; Zoology; Earth; Mathematics; Biology
+	-	-	-	Engineering; Political Science; Other Professions
-	-	-	-	Social Work; Art; Other Humanities; Business; Health; Law; Medicine; Education; Nursing

+ RA, TA, Fellow = 15 per cent or greater.

+ Any Stipend = 32 per cent or greater.

TABLE 7.22--Continued

d) Graduate Field, Stipend Application Status, and Receipt of Stipend



a stipend are Arts and Sciences, while all the fields with 15 per cent or less are Professional fields.

2) Within the Arts and Science fields, the Physical and Biological Science fields surpass the Social Sciences and Humanities considerably, all five Physical Sciences exceeding the percentage for students in general, as do five out of seven Biological Science fields, in contrast with one out of six fields in Social Sciences and one out of six in Humanities.

3) The fields in which 50 per cent or more of Next Year's students (among June, 1961 graduates) expect a stipend are: Chemistry, Biochemistry, Physics, Microbiology, Zoology, Other Biological Sciences, and Psychology other than Clinical.

4) Among the Professional fields, Engineering, Other Professions and Social Work all have percentages between 30 and 40, while Business, Health, Law, Medicine, Education, and Nursing all have 15 per cent or less.

Shifting our attention to the type of stipend, it turns out that there is considerable variation such that although the fields which are "low" on stipends tend to be low on all types, the fields which are "high" are not necessarily high on every kind.

Considering three types of aid, fellowships worth an amount equivalent to tuition plus $1,000 or more, teaching assistantships and research assistantships, fields can be classified simultaneously in terms of a student's chances for particular types of stipend and for any kind [Table 7.22 c)].

Only one field, Biochemistry, is high on all three types of stipend, and the remaining fields where 32 per cent or more expect some support, can be classified in terms of their special forms of aid as follows:

15 per cent or more expecting:

1) Fellowships and Teaching Assistantships: Microbiology, Physics, Psychology, Sociology.

2) Fellowships and Research Assistantships: Physical Science, Other, Other Biological Science, Clinical Psychology.

3) Teaching Assistantships and Research Assistantships: Botany

4) Fellowships Only: Philosophy, Economics, English, Languages, Physiology, History.

5) Teaching Assistantships Only: Chemistry, Zoology, Earth Sciences, Mathematics, Biology.

6) Not High on any Particular Type: Engineering, Political Science, Other Professions.

The remaining fields--Social Work, Art, Other Humanities, Business, Health, Law, Medicine, Education, Nursing--are low on stipends in general and also relatively low on these three forms of aid.

Viewed this way, the picture changes a little, for these findings tell us that a good deal of the support for Arts and Science students comes in the form of part-time jobs--research and teaching assistantships--which have a training focus, but hardly represent free gifts to the students. There are only two fields in the table (Microbiology, 28 per cent, and Philosophy, 26 per cent, where as many as a quarter of the students expect a duty-free stipend which pays their full tuition and a living allowance of $1,000 or more. Thus, while many students receive aid, the American graduate student seldom is "totally supported" during his studies.

Turning to the application status data in Table 7.22, it is clear that the decision to apply, not acceptance or rejection is the major factor producing the field differences [Table 7.22 d)]. The triangular coordinate graph shows clearly that variations in the per cent who did not apply for a stipend are much greater than variations in the per cent of applications which were turned down. Does this mean that if graduate students in Business fields were to increase their application rates they could be supported like Science students? Probably not. No one knows, of course, but when analysis is limited to students who were planning graduate school next year and applied for a stipend, the figures do not look encouraging [Table 7.23 b)]. While the great majority of stipend applicants in each field were not turned down, the rejection rates are very similar to the rates of over-all support. Thus in all 10 Science fields with sufficient cases for tabulation, rejection rates were below 15 per cent; while in all five Humanities fields, three out of five Social Science fields, and four out of eight Professional fields (Business, Education, Law, and Medicine) the rejection rates were 15 per cent or more. The suggestion is that even if application rates were increased in all fields, the observed field differences would remain.

Sex and Academic Performance, as in so many analyses in this research, also play a crucial role in stipend allocation. Table 7.24 a) gives the stipend information by sex and API for a grouped classification of the graduate fields among students accepted for study in Fall, 1961.

The first step in the process, application for a stipend, is summarized in Table 7.24 b). Both sex and API make a considerable difference. Except among high API Social Science students and Health Professions, women are less likely to apply for aid than men of similar academic performance accepted for study in the same fields. Thus, for example, among high API students accepted in Humanities, 80 per cent of the men applied for aid in comparison with 67 per cent of the women. API makes an even greater difference. For example, among men in Physical Science, 91 per cent of the top fifth,

TABLE 7.23

GRADUATE FIELD AND STIPEND

a) Graduate Field, Stipend Application Status, and Stipend Type (Among Those Planning to Go to Graduate School Next Year Who Applied for a Stipend)

Graduate Field	Per cent of Those Who Applied for a Stipend Who Expect to Receive....								Total Per cent Applying for a Stipend	N
	Scholarship		Fellowship		Assistantship		None of This Type	Don't Know Yet		
	Part Tuition	Full Tuition	Tuition Plus Less Than $1,000	Tuition Plus Greater Than or Equal to $1,000	Teaching	Research				
Chemistry	1.0	12.0	1.2	23.0	71.3	7.2	1.2	3.1	91.6	418
Physics	1.1	16.8	2.2	29.8	49.3	11.7	7.9	7.0	79.0	369
Geo.-Geol. (Earth) . . .	-	4.9	-	14.8	58.0	9.9	12.3	11.1	63.8	81
Mathematics	1.5	10.6	2.3	26.0	38.1	7.9	6.4	17.4	63.9	265
Other Phy. Sci.	4.5	10.6	-	33.3	10.6	42.4	12.1	6.1	71.7	66
Engineering	3.0	11.4	2.7	26.6	24.7	24.1	11.3	11.7	51.0	700
Medicine	27.0	12.3	1.0	2.8	1.8	3.3	17.6	40.3	31.6	397
Nursing	-	-	-	-	-	-	-	-	18.2	14
Other Health	26.2	5.6	5.6	12.7	3.2	1.6	12.7	34.9	27.7	126
Biology	1.6	8.2	-	26.2	44.3	4.9	1.6	21.3	42.1	61
Biochemistry	5.0	17.5	2.5	22.5	27.5	36.2	2.5	7.5	83.3	80
Botany	-	-	-	-	-	-	-	-	56.7	38
Microbiology	-	-	-	-	-	-	-	-	75.0	45
Physiology	-	-	-	-	-	-	-	-	41.9	31
Zoology	7.8	2.6	2.6	10.4	49.4	23.4	7.8	13.0	75.5	77
Other Bio. Sci.	-	6.1	2.6	36.8	12.3	32.5	0.9	21.1	66.7	114
Clinical Psychology . . .	9.8	2.4	-	25.2	11.4	33.3	3.3	35.0	59.7	123
Other Psychology	1.1	7.5	5.4	30.1	21.5	23.7	6.5	19.4	69.4	93
Economics	3.8	6.2	9.2	42.3	9.2	7.7	13.8	13.1	58.3	130
Political Science	11.1	13.6	8.6	19.7	9.1	7.6	20.7	17.2	57.9	198
Sociology	1.2	3.8	1.2	28.8	32.5	26.2	13.8	20.0	52.6	80
Other Soc. Sci.	6.7	8.0	9.3	30.7	13.3	10.7	22.7	12.0	50.0	75
Fine Arts	13.2	12.0	4.1	13.9	26.3	1.5	13.9	32.0	43.3	266
English	4.2	12.2	5.4	26.5	22.3	0.9	20.2	13.7	61.5	336
History	10.3	9.2	7.6	34.4	13.0	0.4	16.8	15.3	51.2	262
Languages	5.4	12.8	3.9	27.9	20.5	3.1	16.7	20.9	61.7	258

TABLE 7.23 a)--Continued

Graduate Field	Per cent of Those Who Applied for a Stipend Who Expect to Receive....								Total Per cent Applying for a Stipend	N
	Scholarship		Fellowship		Assistantship		None of This Type	Don't Know Yet		
	Part Tuition	Full Tuition	Tuition Plus Less Than $1,000	Tuition Plus Greater Than or Equal to $1,000	Teach-ing	Re-search				
Philosophy	5.9	11.8	5.9	38.8	5.9	3.5	15.3	14.1	66.9	85
Other Humanities	-	-	-	-	-	-	-	-	40.0	22
Education	13.4	11.3	4.8	13.0	24.1	0.8	21.2	21.3	20.8	709
Business	7.8	15.3	8.7	9.5	12.4	15.0	19.4	22.8	25.5	346
Law	17.9	25.6	7.8	1.5	1.5	1.9	22.8	26.5	28.0	464
Other Professions	19.0	20.2	9.0	11.4	9.9	12.4	11.2	16.7	56.6	699
Social Work	6.8	18.2	12.9	25.0	3.0	0.8	0.8	43.2	55.3	132

N =	7,160
NA, Graduate Field	72
NA, Stipend Type	115
NA, Both	1
Excluded from Table:	
Those Planning Graduate School Later	24,198
Those Who Didn't Apply for a Stipend	10,307
Those Not Going to Graduate School	12,383
NA, Plans	2,428
Total Weighted N =	56,664

TABLE 7.23--Continued

b) Per cent "None" Among Those Accepted by School and Who Applied for a Stipend

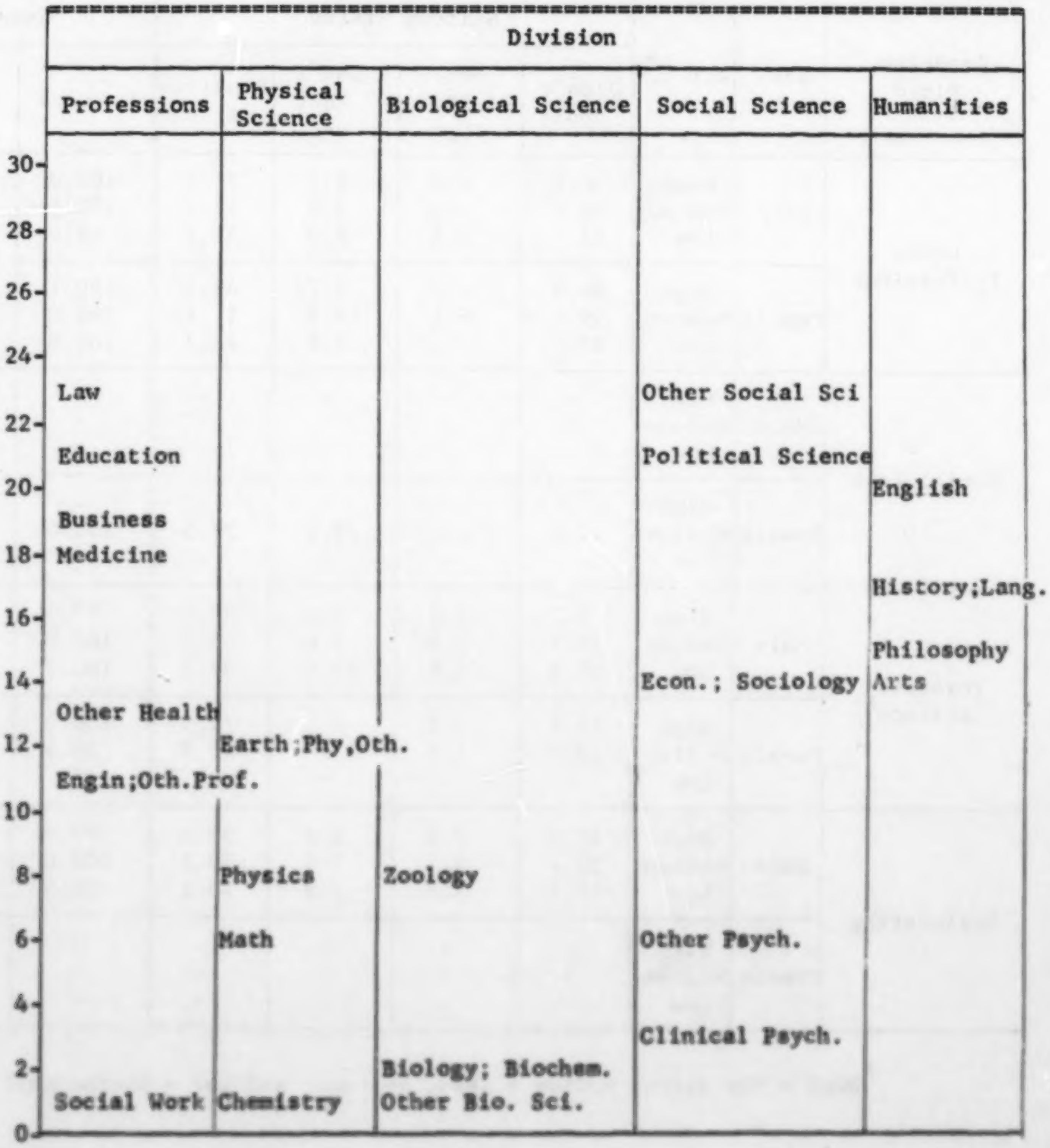


TABLE 7.24

GRADUATE FIELD, STIPEND STATUS AND PLANS, CONTROLLING FOR SEX AND A.P.I.

a) Among Those Already Accepted to Graduate School for Next Year

Graduate Field	Sex	A.P.I.*	Stipend Status				Total	
			Didn't apply	None of this type	Don't know yet	Received stipend	Per cent	N
Other Professions	Male	High	34.8	4.8	8.7	51.7	100.0	230
		Medium	48.6	3.8	5.0	42.7	100.1	424
		Low	63.1	6.8	8.9	21.1	99.9	526
	Female	High	40.0	4.2	6.7	49.2	100.1	120
		Medium	59.5	8.1	15.3	17.1	100.0	111
		Low	83.1	-	3.6	13.3	100.0	83
Social Work	Male	High	-	-	-	-	-	5
		Medium	-	-	-	-	-	36
		Low	-	-	-	-	-	34
	Female	High	-	-	-	-	-	33
		Medium	42.1	-	28.4	29.5	100.0	95
		Low	-	-	-	-	-	33
Physical Science	Male	High	9.2	3.2	4.0	83.5	99.9	595
		Medium	28.9	5.9	7.0	58.2	100.0	488
		Low	47.5	4.9	10.6	37.0	100.0	284
	Female	High	15.8	4.2	7.5	72.5	100.0	120
		Medium	53.9	2.2	-	43.8	99.9	89
		Low	-	-	-	-	-	20
Engineering	Male	High	27.6	7.8	5.0	59.5	99.9	536
		Medium	53.4	5.4	7.9	33.3	100.0	496
		Low	77.5	2.5	4.8	15.2	100.0	315
	Female	High	-	-	-	-	-	3
		Medium	-	-	-	-	-	10
		Low	-	-	-	-	-	2

*High = Top fifth; Medium = Above average; and Low = Bottom half.

TABLE 7.24 a)--Continued

Graduate Field	Sex	A.P.I.	Stipend Status				Total	
			Didn't apply	None of this type	Don't know yet	Received stipend	Per cent	N
Medicine	Male	High	62.2	5.9	14.3	17.4	99.8	538
		Medium	73.1	6.2	10.8	10.0	100.1	502
		Low	80.0	2.4	11.9	5.6	99.9	126
	Female	High	-	-	-	-	-	37
		Medium	-	-	-	-	-	24
		Low	-	-	-	-	-	13
Health	Male	High	-	-	-	-	-	20
		Medium	66.0	2.1	18.1	13.8	100.0	94
		Low	79.3	5.6	3.4	11.7	100.0	179
	Female	High	-	-	-	-	-	45
		Medium	69.8	7.5	0.9	21.7	99.9	106
		Low	80.5	-	15.9	3.7	100.1	82
Biological Science	Male	High	10.0	2.2	6.7	81.1	100.0	90
		Medium	26.1	2.7	10.3	60.9	100.0	184
		Low	65.2	4.0	7.6	23.2	100.0	198
	Female	High	16.9	3.4	1.1	78.7	100.1	89
		Medium	30.9	-	12.4	56.7	100.0	97
		Low	70.0	2.0	14.0	14.0	100.0	50
Social Science	Male	High	19.5	9.2	6.1	65.2	100.0	293
		Medium	37.0	6.6	16.3	40.1	100.0	332
		Low	69.9	6.8	10.2	13.1	100.0	206
	Female	High	11.9	10.0	20.6	57.5	100.0	160
		Medium	76.3	11.2	3.9	8.6	100.0	152
		Low	92.0	-	4.0	4.0	100.0	50
Humanities	Male	High	20.5	12.0	10.3	57.2	100.0	458
		Medium	44.1	9.4	12.5	33.9	99.9	392
		Low	64.6	11.1	8.4	15.9	100.0	226
	Female	High	33.2	9.7	10.2	47.0	100.1	558
		Medium	62.2	4.5	15.8	17.5	100.0	423
		Low	86.0	8.1	1.7	4.1	99.9	172

TABLE 7.24 a)--Continued

Graduate Field	Sex	A.P.I.	Stipend Status				Total	
			Didn't apply	None of this type	Don't know yet	Received stipend	Per cent	N
Education	Male	High	43.8	11.1	10.5	34.6	100.0	162
		Medium	72.7	5.0	6.9	15.3	99.9	535
		Low	87.6	3.1	3.6	5.7	100.0	685
	Female	High	51.8	12.3	8.9	27.0	100.0	440
		Medium	84.4	2.5	3.5	9.5	99.9	913
		Low	95.8	0.6	0.2	3.5	100.1	637
Business	Male	High	57.1	7.7	7.3	28.0	100.1	261
		Medium	71.4	5.2	5.6	17.9	100.1	521
		Low	87.0	2.7	4.8	5.6	100.1	414
	Female	High	-	-	-	-	-	37
		Medium	-	-	-	-	-	44
		Low	98.2	-	-	1.8	100.0	57
Law	Male	High	52.0	9.5	9.9	28.6	100.0	454
		Medium	72.9	6.2	8.7	12.1	99.9	595
		Low	90.4	1.9	4.3	3.4	100.0	529
	Female	High	-	-	-	-	-	16
		Medium	-	-	-	-	-	36
		Low	-	-	-	-	-	9

N = ...	16,929
Excluded: Planning Grad School Later	22,167
NA Stipend	70
NA A.P.I.	559
NA Field	2,087
NA Two or More	41
Excluded: Not Going to Grad School	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

TABLE 7.24--Continued

b) Per cent Applying for a Stipend

Graduate Field	A.P.I.					
	Top Fifth		Above Average		Bottom Half	
	Male	Female	Male	Female	Male	Female
Arts and Science						
Biological Science	90 (90)	83 (89)	74 (184)	69 (97)	35 (198)	30 (50)
Physical Science .	91 (595)	84 (120)	71 (488)	46 (89)	52 (284)	- (20)
Social Science . .	80 (293)	88 (160)	63 (332)	24 (152)	30 (206)	8 (50)
Humanities	80 (458)	67 (558)	56 (392)	38 (423)	35 (226)	14 (172)
Professions						
Other	65 (230)	60 (120)	51 (424)	40 (111)	37 (526)	17 (83)
Engineering . . .	72 (536)	- (3)	47 (496)	- (10)	22 (315)	- (2)
Health	- (20)	- (45)	34 (94)	30 (106)	21 (179)	20 (82)
Education	56 (162)	48 (440)	27 (535)	16 (913)	12 (685)	4 (637)
Business	43 (261)	- (37)	29 (521)	- (44)	13 (414)	2 (57)
Law	46 (454)	- (16)	27 (595)	- (36)	10 (529)	- (9)
Medicine	38 (538)	- (37)	27 (502)	- (24)	20 (126)	- (13)

N = ...	16,693
Excluded: Social Work	236
Planning graduate school later .	22,167
NA Stipend	70
NA A.P.I.	559
NA Grad field	2,087
NA two or more	41
Excluded: Not Going to Grad. School. . . .	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

TABLE 7.24--Continued

c) Per cent "Refused" (None/All, except those who "Didn't Apply")

Graduate Field	A.P.I.					
	Top Fifth		Above Average		Bottom Half	
	Male	Female	Male	Female	Male	Female
Arts and Science						
Biological Science	2.4 (81)	4.1 (74)	3.7 (136)	0.0 (67)	11.5 (69)	- (15)
Physical Science .	3.5 (540)	5.0 (106)	8.3 (347)	- (41)	9.3 (149)	- (5)
Social Science . .	11.4 (236)	11.4 (141)	10.5 (209)	- (36)	22.6 (62)	- (4)
Humanities	15.0 (364)	14.5 (373)	16.8 (219)	11.9 (160)	31.4 (80)	- (24)
Professions						
Other	7.4 (150)	7.0 (72)	7.4 (218)	- (45)	18.4 (194)	- (14)
Engineering . . .	10.8 (388)	- (3)	11.6 (231)	- (0)	11.1 (71)	- (0)
Education	19.7 (91)	25.5 (212)	18.3 (146)	16.0 (142)	25.0 (85)	- (27)
Business	17.9 (112)	- (22)	18.2 (149)	- (4)	20.8 (54)	- (1)
Law	19.8 (218)	- (7)	22.9 (161)	- (22)	19.8 (51)	- (0)
Medicine	15.6 (203)	- (22)	23.0 (135)	- (3)	- (25)	- (4)

N = ...	6,820
Not apply	9,839
Excluded:	
Social Work and Health	270
Planning grad school later	22,167
NA Stipend	70
NA A.P.I.	559
NA Grad. Field	2,087
NA two or more	41
Excluded: Not going to Grad. School	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

TABLE 7.24--Continued

d) Per cent with a Stipend

Graduate Field	A.P.I.					
	Top Fifth		Above Average		Bottom Half	
	Male	Female	Male	Female	Male	Female
Arts and Science						
Biological Science	81 (90)	79 (89)	61 (184)	57 (97)	23 (198)	14 (50)
Physical Science .	84 (595)	72 (120)	58 (488)	44 (89)	37 (284)	- (20)
Social Science . .	65 (293)	58 (160)	40 (332)	9 (152)	13 (206)	4 (50)
Humanities	57 (458)	47 (558)	34 (392)	18 (423)	16 (226)	4 (172)
Professions						
Other	52 (230)	49 (120)	43 (424)	17 (111)	21 (526)	13 (83)
Engineering . . .	60 (536)	- (3)	33 (496)	- (10)	15 (315)	- (2)
Health	- (20)	- (45)	14 (94)	22 (106)	12 (179)	4 (82)
Education	35 (162)	27 (440)	15 (535)	10 (913)	6 (685)	4 (637)
Business	28 (261)	- (37)	18 (521)	- (44)	6 (414)	2 (57)
Law	29 (454)	- (16)	12 (595)	- (36)	3 (529)	- (9)
Medicine	17 (538)	- (37)	10 (502)	- (24)	6 (126)	- (13)

N = ...	16,693
Excluded: Social Work	236
Planning Grad. School Later. . . .	22,167
NA Stipend	70
NA A.P.I.	559
NA Grad. field	2,087
NA two or more	41
Excluded: Not going to Grad School	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

71 per cent of the above average, and 52 per cent of the bottom half applied for aid. At the same time, within a sex and API grouping, application rates vary by field, the general rank order being Natural Sciences; Social Sciences and Humanities; Engineering and Other Professions; Health, Education and Business; and finally, Law and Medicine. Considering only top fifth males, 90 per cent applied in the Natural Sciences, 80 in the Social Sciences and Humanities, as compared with 56 to 72 in Education, Other Professions and Engineering, and less than half in Business, Law and Medicine.

Table 7.24 c) gives the outcomes of these pleas, the majority of which were granted regardless of sex, field, and API. There is a tendency for rejection rates to be higher in groups with lesser academic performance, particularly in the Arts and Science fields, but those bottom half students who do apply come out pretty well. (Of course, applicants from the bottom half are probably not representative of bottom half students, by any means.) Sex makes little difference in the nine cells where there are enough female applicants to percentage, the women's rejection rates being neither systematically higher nor lower. Field of study does make a difference, however, rejection rates being lowest in the Natural Sciences, next lowest in Social Sciences, Humanities, Other Professions, and Engineering; and highest in Education, Business, Law, and Medicine. More top fifth men were rejected in Education, Business, Law, and Medicine than bottom half men in Natural Science fields.

To summarize:

1) Low API students are considerably less likely to apply for a stipend, and a little less likely to receive one if they apply.

2) Women are less likely to apply for stipends, but have no disadvantage of advantage in offerings among those who apply.

3) Fields of study show a generally similar trend in applications and acceptance of applications, the situation being most favorable in the Natural Sciences, least favorable in the Professional fields of Medicine, Law, Business, Education, and Health Professions; while Social Sciences, Humanities, Engineering, and Other Professions lie between these extremes.

The joint result of self selection and stipend allocation is that aid varies tremendously when sex, API, and field of study are considered simultaneously for students accepted to begin study in Fall, 1961 [Table 7.24 d)]. The percentages increase quite consistently across rows and up columns. Thus, in all the Arts and Science fields, more than half of the top fifth API men expect stipend aid in contrast to 13 per cent or less of the bottom half women; and at the same time, among top fifth men the per cent with a stipend ranges from more than 80 in the Natural Sciences to 17 in Medicine.

It is apparent that in 1961 as in the past, there was great heterogeneity in the financing of studies in different graduate fields. While for undergraduate study, the Science majors and the pre-meds have essentially similar academic situations, advanced study in different fields means quite dissimilar ways of life.

Information on expected sources of money other than stipends helps underline the variety of financial situations for students in different fields. Table 7.25 a) gives the per cent of students expecting income from various sources for those students planning to attend school in Fall, 1961.

Let us focus on three of the sources of income--stipends, full-time work, and aid from parents or relatives, calling a field High if its percentage is equal to or greater than future graduate students in general for that source, calling it Low if its percentage is below all future graduate students. When field scores are intercorrelated it turns out that there are strong negative relationships (Q for Stipend and Parental = -.69; Stipend and Full-time Work = -.78; Parental and Full-time Work = -1.00); fields which tend to be characterized by one of these types of support tend to be low on the other two. The relationships are so strong that 28 out of the 33 fields can be classified as High on one of these three sources and Low on the other two [Table 7.25 b)]. Except for Mathematics, Sociology, Other Professions, Biochemistry, and Botany, each field can be characterized by "Stipend Support," "Parental Aid," or "Self-Support." Table 7.25 c) arrays the fields simultaneously by support type and division with some interesting differences. Professional fields divide between self-support (Engineering, Business, Education, Nursing) and parental support (Medicine, Law, Social Work, Health); Science fields are generally stipend-supported; while Social Sciences and Humanities run to parental support.

Another set of facts, and then we can attempt to pull all of this together. In Table 7.26 the fields are classified by support type and whether their students tend to be High or Low on API, SES, and Postponement of graduate study.

In terms of API, the Parental and Stipend fields are relatively high, while the Self-Support fields are low. In terms of SES, Parental fields are highest while Self-Support fields are lowest. In terms of Postponement, Stipend and Parental fields are low, Self-Support fields are high.

We must remember that these data treat fields, not people, and that in every field there are students with every support type, SES origin, and API. At the same time, the general outline of these findings suggests the following interpretation.

TABLE 7.25

GRADUATE FIELD AND FINANCIAL SOURCES NEXT YEAR (AMONG THOSE PLANNING GRADUATE SCHOOL IN THE FALL)

a) Graduate Field and All Sources of Support

Graduate Field	Financial Sources								Total	
	Full-time Job	Part-time Job	Savings	NDEA Loan	Other Loan	Parents, Relatives	Income from Spouse	Other	Per cent	N
Chemistry	16	15	29	4	0	24	18	31	137	667
Physics	22	10	31	3	2	23	14	33	146	432
Geo.-Geol. (Earth).	17	23	42	12	2	26	17	21	160	115
Mathematics	31	21	24	3	2	22	18	27	148	387
Other Phy. Sci. . . .	22	14	17	7	4	22	11	47	144	83
Engineering	43	19	22	2	3	10	12	21	142	1,313
Medicine	3	32	42	8	13	80	14	14	208	1,261
Nursing	53	4	21	4	11	13	20	22	148	76
Other Health Prof. . .	11	30	33	7	13	66	17	24	201	440
Biological Sci. . . .	33	18	18	12	2	29	13	17	144	136
Biochemistry	3	35	15	12	0	61	12	20	148	74
Botany	10	14	34	2	0	62	22	22	146	59
Microbiology	4	30	23	2	2	30	14	43	130	56
Physiology	34	19	23	0	4	38	20	18	134	73
Zoology	16	26	17	22	4	34	18	33	170	90
Other Bio. Sci. . . .	14	34	27	6	4	37	13	31	166	167
Clinical Psychology	13	31	34	10	0	63	19	30	190	201
Other Psychology .	19	22	23	7	2	34	24	28	163	123
Economics	17	23	34	5	4	35	13	28	161	208
Political Sci. . . .	14	28	35	10	6	51	13	18	175	238
Sociology	28	31	23	9	6	26	24	23	174	130
Other Soc. Sci. . . .	14	28	34	10	8	62	17	21	174	145
Fine Arts	21	41	28	10	7	43	15	17	182	612
English	24	24	22	6	3	39	17	21	156	526
History	31	23	21	8	0	35	18	21	163	680
Languages	21	18	19	9	3	42	8	23	143	396
Philosophy	10	26	26	2	6	28	22	35	155	125
Other Humanities .	48	20	17	6	4	22	19	6	142	34
Education	52	19	14	3	2	25	17	9	143	3,377
Business	61	26	24	*	0	36	13	11	163	1,334
Law	13	35	31	6	6	68	13	12	186	1,643
Social Work	13	29	27	3	13	61	16	23	171	239
Other Professions .	21	30	23	4	0	31	17	24	167	1,308
Total . . .	29	26	25	6	6	38	13	18		16,066

NA, Graduate Field Only 338
NA, Sources of Finances Only 332
NA, Both 99
Excluded from Table:
Not Planning to Go to Graduate School This Fall 16,381
NA, Plans . . . . [illegible]
Total Weighted N = ... [illegible]

TABLE 7.23--Continued

b) Income from Stipends, Full-time Work and Parents or Relatives, by Graduate Field

Full-time Employment	Parental Support			
	Low		High	
	Stipend			
	Low	High	High	Low
High	Engineering Physiology History Biology Other Humanities Business Education Nursing	Mathematics		
Low	Sociology Other Professions	Chemistry Physics Microbiology Zoology Other Phy. Sci. Psychology Other Bio. Sci. Earth Philosophy Economics	Biochemistry Botany	English Languages Clinical Psych. Pol. Sci. Other Soc. Sci. Social Work Fine Arts Health Law Medicine

TABLE 7.25--Continued

c) Income from Stipends, Full-Time Work and Parents or Relatives, by Graduate Field, Grouped by Division

Financial Support	Division				
	Professions	Physical Science	Biological Science	Social Science	Humanities
Self-Support	Engineering- Business + Education - Nursing -		Physiology - Biology -		History + Other +
Self and Stipend		Math -			
Stipend		Chemistry - Physics + Other Phy.Sci.+ Earth -	Microbiology + Zoology - Other Bio.Sci.+	Psychology + Economics +	Philosophy+
Stipend and Parental			Biochemistry + Botany +		
Parental	Medicine + Law + Social Work+ Health +			Clinical Psych+ Political Sci.+ Other +	English + Languages + Art +

Note:

Sociology and Other Professions are unclassified.

+ = Greater than or equal to graduate students in general on high socio-economic status.

- = Less than graduate students in general on high socio-economic status.

TABLE 7.26

DISTRIBUTION OF GRADUATE FIELDS BY TYPE OF SUPPORT, A.P.I., SES, AND POSTPONEMENT OF GRADUATE STUDIES

Variables	Type of Support[a]		
	Self-Support	Stipend	Parental
A.P.I.[b]			
High	0	4	4
Low	8	6	6
Total . .	8	10	10
SES[c]			
High	3	7	10
Low	5	3	0
Total . .	8	10	10
Postponement[d]			
High	4	0	1
Low	4	10	9
Total . .	8	10	10

[a] From Table 7.25 c)

[b] From Table 7.2 b)

[c] From Table 7.8 b)

[d] From Table 7.17 b)

In terms of recruitment and financing, there appear to be four kinds of graduate fields: 1) The elite professions, 2) The minor professions, 3) Natural Sciences, and 4) Humanities and Social Sciences, each characterized by a particular pattern of support and recruitment.

In the elite professions of which Law and Medicine are the prototypes, the period of study is long, "evening courses" are out of the question, and stipend help is negligible. However, entry into the field is barred to anyone who has not passed through graduate study (even though technically one can still "read law" in some states) and the attraction of fields in terms of eventual income and prestige is very high. Thus, students and their families are quite willing to invest a considerable sum in the costs of school. However, because of the costs involved, low SES families are unlikely to have the funds to support their sons. Therefore, as we have seen, Law and Medicine recruit predominantly high SES students, who pay full fare and consider it a good investment. Entry is seldom postponed in these fields.

In the minor professions, of which Engineering, Business, and Education are typical, graduate study is an advantage for eventual promotions and higher salaries. However, entry into the field with a bachelor's degree is permissible and normal, and stipend support is very small. Thus, many students begin full-time work and expect to begin their studies after they have earned some money or attend part time. As such a career pattern requires little or no capital beyond the costs of a bachelor's degree, these professions attract a disproportionate number of low SES students.

In the Natural Sciences, for reasons which reflect the high priority given to applied Science in America, stipends are available on a widespread scale. Since advanced degrees are advantageous in scientific careers and capital investment is negligible, considerable proportions enter graduate school immediately, although because jobs are available for bachelor's degree holders, postponement is common too. Like the minor professions, the Sciences (as we saw in Chapter IV) provide attractive careers for lower SES students, six out of 12 Science fields being classified as low in SES.

The Social Sciences and Humanities have a less clear-cut pattern. Compared with the professions, chances for stipend support are high, but compared with Science fields the pickings are considerably slimmer. On the other hand, career opportunities for students with only a bachelor's degree are limited in these fields. However, the status guaranteed by advanced degrees in these fields and the presumably greater interest in intellectual matters of upper SES families means that parental support may be forthcoming for those with sufficient resources, while stipend support means that the investment is seldom as staggering as for the elite professions. It is thus not surprising that every field in the Social Sciences and Humanities is "High on SES," but none is as high as Law or Medicine.

At the very least it appears that advanced study, unlike undergraduate study (whose simple structural components consist of varying quality schools and the economic distinction between Public and Private), is an exceedingly complicated and differentiated structure, whose patterns of recruitment involve interrelationships of career structures, academic ability, patterns of financing, and class differences, always compounded by the confusing propensity of women to have better academic records and less strong motivations for advanced study.

Career Plans

Passing quickly over the time between entry into graduate school and completion of graduate study, a period running between one and ten years depending on the field, the analysis of future graduate students will be concluded by examining the students' long-run career plans. Jobs being fairly complicated matters, attention will be given to three different aspects: a) the career field intended by students in various graduate fields, b) the activities anticipated, and c) future employer.

Career Field

That there is a positive correlation between field of graduate study and long-run career field is a fact so obvious that it would not be worth reporting, except that there are some interesting variations in the correlation (Table 7.27). Eighty per cent or more of the students planning study in Nursing, Medicine, Chemistry, Health Professions, Social Work, Engineering, Clinical Psychology, Physics, and Other Professions, give identical code numbers from the questionnaire for their graduate and career fields, but in all the remaining fields more than one out of five students have a less than perfect match.

Primary and Secondary Education is the most common career field where a discrepancy exists, and in 10 of the graduate fields 20 per cent or more of the graduate students anticipate careers in Education. These fields, ordered by per cent planning careers in Education are: History (42), Biology (40), English (31), Other Humanities (30), Languages (30), Other Social Sciences (27), Zoology (26), Arts (24), Sociology (21), and Botany (21).

There are 13 other instances in Table 7.27 where more than 10 per cent of the graduate students in a given field expect careers in other fields or groups of fields:

Graduate Field	Career Field	Per cent
Political Science	Other Professions	28*
Economics	Business	25
Botany	Other Bio. Sci.	21
Physiology	Other Bio. Sci.	21
Physiology	Medicine	16
Philosophy	Other Professions	16**
Zoology	Other Bio. Sci.	14
Other Humanities	Humanities	14
Biochemistry	Health	13
Other Physical Science	Engineering	12
Sociology	Social Work	12
Microbiology	Health	11
Other Social Sci.	Humanities	11
Humanities	Other Professions	11

*Presumably heavily Public Administration

**Presumably heavily Religion.

If a pattern is sought in these differences, the underlying factor seems to be divisional. In Table 7.27 b) fields are arrayed by division and by the per cent with career field identical to graduate field. Drawing a cutting point at 64 per cent, it is seen that: 1) the professions and Physical Sciences are all above the line; 2) all Humanities fields are below the line, 3) the Biological Sciences, Microbiology and Biochemistry are above, all other fields below, 4) in Social Sciences, all fields are below except for Clinical Psychology.

Strong percentage differences are always interesting, but these are particularly interesting, for among the Arts and Sciences they are rather like the rank order on postponement in graduate study, a phenomenon previously resistant to correlations. Table 7.27 c) correlates the percentage postponing graduate study with the percentage reporting a career field outside of Arts and Science for the Arts and Science fields. The correlation is far from perfect, but of the fields with

TABLE 7.27

GRADUATE MAJOR AND FUTURE CAREER FIELD

a) Per cent in Given Future Career Field When the Career Field is Not Identical[a] to the Graduate Major

Graduate Major	Future Career Field													Total	
	Identical to Graduate Major	Nat. Sci.	Bio. Sci.	Soc. Sci.	Hu-mani-ties	Eng.	Med.	Edu.	Bus.	Law	Soc. Work	Other Health	Other Profs	Per cent	N
Chemistry	91	1	0	0	0	0	0	5	0	0	0	0	2	99	861
Physics	81	3	1	0	0	6	0	4	1	0	0	1	4	101	721
Geo., Geog. (Earth) .	65	1	0	3	2	1	0	19	1	0	0	0	8	100	271
Mathematics	68	3	0	0	0	6	1	15	4	0	0	0	4	101	898
Other Physical Sci. .	65	2	1	0	0	12	1	13	1	1	0	0	4	100	156
Engineering	85	1	0	0	0	8	0	0	3	0	0	0	3	100	3,041
Medicine	97	0	0	0	0	0	0	1	0	0	0	1	1	100	1,431
Nursing	98	0	0	0	0	0	0	1	0	0	0	0	0	99	400
Other Health	88	0	0	1	0	0	0	4	0	0	0	4	2	99	663
Biology	46	0	6	0	2	0	4	40	1	0	0	1	1	101	360
Biochemistry	71	9	2	0	0	0	4	1	0	0	0	13	2	102	182
Botany	48	1	21	0	0	0	0	21	0	0	0	0	9	100	103
Microbiology	79	0	3	0	0	0	2	2	0	0	0	11	2	99	131
Other Biology	62	0	9	0	0	2	1	10	0	0	0	7	8	99	287
Physiology	46	0	21	0	0	0	16	7	0	0	0	10	0	100	96
Zoology	48	1	14	0	0	0	3	26	0	0	0	1	8	101	157
Other Professions . .	80	0	0	1	1	1	0	9	2	0	0	1	4	99	2,988
Clinical Psychology .	84	0	0	1	0	0	1	10	2	0	1	0	2	101	366
Other Psychology . .	61	1	0	5	0	1	0	12	13	1	0	1	4	99	281
Economics	52	0	0	2	1	2	0	5	25	2	0	0	10	99	455
Political Science . .	53	1	0	1	1	0	0	10	6	1	0	0	28	101	676
Sociology	49	0	0	1	0	0	0	21	7	0	12	0	9	99	362

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[a] In some cases (e.g., Education) it is possible to find that people "changed" from a given Graduate Major to the identical category on Future Career Field. This seeming inconsistency is explained by the fact that those categories frequently include sub-categorizations (e.g., 25 per cent of those with Graduate Majors in one educational field actually expect to teach in another).

TABLE 7.27a)--Continued

Graduate Major	Future Career Field													Total	
	Identical to Graduate Major	Nat. Sci.	Bio. Sci.	Soc. Sci.	Hu-mani-ties	Eng.	Med.	Edu.	Bus.	Law	Soc. Work	Other Health	Other Profs	Per cent	N
Other Social Sciences	41	1	0	8	11	0	0	27	2	0	0	1	8	99	270
Fine Arts	62	1	0	0	3	1	0	24	3	0	0	0	5	99	1,407
English	55	0	0	0	2	0	0	31	4	0	0	0	7	99	1,172
Languages	48	1	0	1	3	0	0	30	4	1	0	1	10	99	700
History	41	0	0	2	1	0	0	42	3	1	1	0	10	101	1,121
Philosophy	62	1	0	1	3	0	0	13	4	0	0	0	16	100	193
Humanities, Other . .	28	0	0	1	14	2	0	30	6	1	0	9	11	102	176
Education	68	0	0	0	1	0	0	25	1	0	0	1	3	99	11,469
Business	74	0	0	0	0	6	0	2	10	0	0	0	7	99	4,526
Law	79	0	0	2	0	1	0	1	11	0	0	0	6	100	2,434
Social Work	86	0	0	0	0	0	0	9	2	0	0	0	1	98	705

N = ...	39,059
NA, Future Career Field	667
NA Graduate Field Only	1,622
NA Both	505
Excluded from Table:	
Not going to graduate school	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

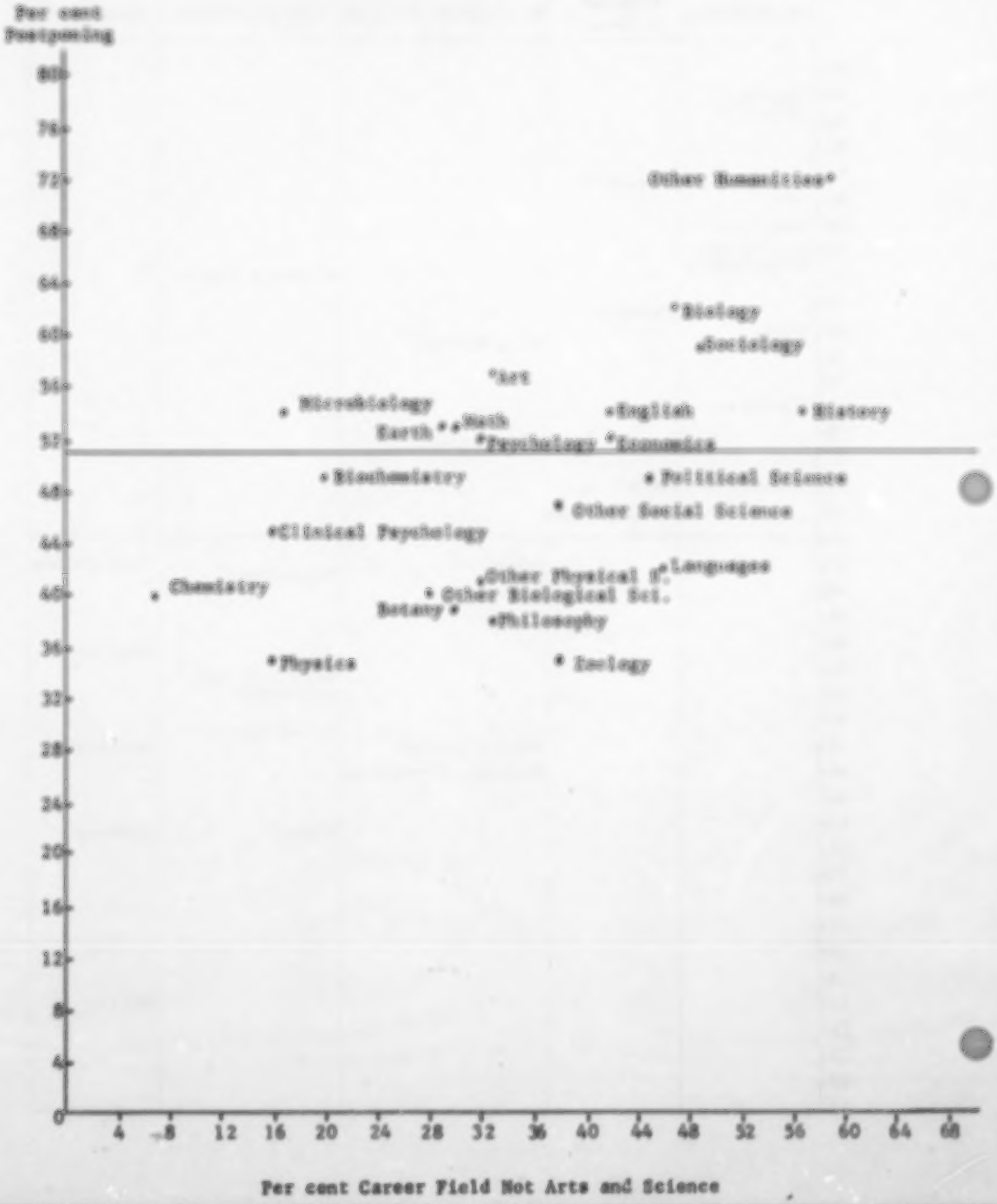
TABLE 7.27--Continued

b) Per cent with Identical Graduate Field and Career Field, Grouped by Division

	Division				
	Professions	Physical Science	Biological Science	Social Science	Humanities
100					
98	Nursing Medicine				
96					
94					
92		Chemistry			
90					
88	Health				
86	Social Work Engineering				
84				Clinical Psych.	
82		Physics			
80	Other Law				
78			Microbiology		
76					
74	Business				
72			Biochemistry		
70					
68	Education	Math			
66		Earth; Other			
64					
62			Other		Art; Philos.
60				Psychology	
58					
56					
54					English
52				Political Sci. Economics	
50					
48			Botany;Zoology	Sociology	Languages
46			Biology; Physiology		
44					
42					
40				Other	History
38					
36					
34					
32					
30					
28					Other
26					
24					
22					
20					

TABLE 7.27--Continued

c) Per cent Postponing Graduate Studies in Arts and Science Fields by Per cent Planning Career Outside of Arts and Sciences



25 per cent or fewer "mismatches,"[2] four out of five have less than 30 per cent postponement; of the fields with between 26 and 43 per cent discrepancies, six out of 13 have 30 per cent postponement rate, while in the fields with a discrepancy percentage of 44 or more, four out of five have postponement rates over 30 per cent.

While these are ecological correlations (correlations between properties of groups not individuals) and do not prove that it is the student with a "discrepancy" who is more likely to postpone, the following interpretation is suggested.

One of the great (and generally ignored) problems in Arts and Science fields other than Physical Sciences is the desultory fashion in which students enter and complete their studies. While the faculties in schools teaching the elite professions are a little like train crews who pick up passengers at a particular time and deliver them to a particular place within a specified interval of time, faculties in Arts and Sciences are more like men who sit at the information booth giving out knowledge to people who wander in at various times and depart for quite heterogeneous destinations at quite heterogeneous times. The data in Table 7.27 c) suggest that a major part of the reason is that Arts and Science faculties, particularly in the Humanities and Social Sciences, do not control a body of knowledge organized around a particular career, as law school is adapted to the profession of lawyer and medical school to the profession of medicine. Rather they are masters of a body of lore which is relevant for a variety of professional contexts. Graduate study in History is a necessity for the future professional historian, but a great proportion of the graduate students in History appear to be high school teachers for whom advanced study in History is useful, but hardly necessary. Similarly, Political Science feeds government, Economics is useful collateral reading for businessmen, English is good for Secondary English teachers, and Biological Sciences service Health Professions and Secondary Education. At the same time, in curriculum and legislation these fields are "supposed" to train historians, economists, literary folk and biological scientists. It is instructive to compare Clinical Psychology, an Arts and Science field with a clear-cut professional structure, and Other Psychology, a more amorphous academic discipline. Even though in many cases instruction is in the same department in the same institution, 32 per cent of the future graduate students in Other Psychology give a different profession as their career field in contrast with 14 per cent of the clinical psychologists. It is perhaps no coincidence that more other psychologists are postponing their studies than clinical psychologists, even though the latter field includes more women and low APT men.

Whether or not such a development would be desirable, the suggestion is that postponed and intermittent graduate study will continue in Arts and Science fields until advanced study in these fields is prerequisite for entry into employment for their students.

Activities

Cutting across the content of a given occupation are certain functions which transcend particular fields. Whether the content area is arc welding or brain surgery, some people within the field make their living teaching it and some do not, and in an age of increasing organization there are few fields where some men and women do not work at administration. For the graduate fields in the survey four activities were selected as of particular importance--Teaching, Research, Administration, and "Service to patients or clients"--and each future graduate student was asked "Which ones do you anticipate will be an important part of your long-run career work? (Circle any which apply.)" The generality of the functions is such that there was only one field where more than nine per cent circled "None of these," the field being Fine Arts where 17 per cent circled the negative response.

Table 7.28 a) gives the distribution of responses, which are often multiple, the percentages in Social Work summing to 175, Biochemistry to 158, Education to 131, etc. As is so often the case, the differences are more clear when the distributions are seen within and between divisions [Tables 7.28 b), 7.28 c), 7.28 d), 7.28 e)].

"Teaching" is extremely popular [Table 7.28 b)]. Obviously, 94 per cent of those in Education anticipate teaching, but it is interesting that with the two exceptions of Business and Law, 20 per cent or more of the graduate students in each field expect to teach, although it should be noted that no information on level (college, primary, or secondary) is given by this question. As one would expect, the Arts and Science fields run high, but 66 per cent of the Nurses (not, of course, all nurses, but those students with bachelor's degrees who expect graduate study in nursing) and 34 per cent of those in Other Professions are planning to do some teaching and about a quarter of those in Social Work, Medicine, and Other Professions also circled the item. Within the Arts and Science fields, teaching interest is greatest in Humanities, all six fields being over 70 per cent, and lowest in Physical Sciences, four out of five fields being 31 per cent or lower. The Biological Sciences and Social Sciences scatter considerably, more than 60 per cent anticipating teaching in Biology, Other Social Science, Other Biological Sciences, Zoology, Sociology, Psychology, and Physiology; while less than 34 per cent circled the item in Botany, Political Science, Biochemistry, Economics, Clinical Psychology, and Microbiology--that is, mostly in the fields just observed to have a heavy professional tinge.

TABLE 7.28

GRADUATE FIELD AND CAREER ACTIVITIES

a) Per cent Checking Each Career Activity

Graduate Field	Career Activities					N
	Teaching	Research	Administration	Service	None of Preceding	
Chemistry	39.3	86.3	13.2	2.9	2.0	860
Physics	38.9	87.0	23.6	1.9	1.7	721
Geology, Geography. .	48.5	48.5	18.5	3.3	6.3	270
Mathematics	67.2	61.6	21.3	6.3	3.6	873
Other Physical Sci. .	63.1	77.5	20.9	3.3	3.9	133
Engineering	20.0	39.3	48.3	18.3	0.8	3,031
Medicine	23.3	41.6	4.0	95.3	0.6	1,638
Nursing	63.7	17.9	28.6	80.1	0.3	402
Other Health	24.0	23.2	13.2	85.1	1.3	638
Biology	78.2	48.3	8.6	6.7	0.3	326
Biochemistry	46.2	92.4	8.2	10.9	0.0	186
Botany	52.9	74.0	16.4	1.0	2.9	106
Microbiology	37.3	90.0	6.8	26.2	0.8	126
Physiology	61.7	83.0	3.2	27.7	0.0	96
Zoology	68.4	78.3	11.0	5.2	2.6	135
Other Biological Sci.	71.7	78.3	11.6	11.6	2.1	286
Clinical Psychology .	46.3	48.0	12.6	83.2	0.8	357
Other Psychology . .	62.7	63.9	23.6	30.4	0.7	276
Economics	45.6	38.7	57.1	9.8	3.6	430
Political Science . .	49.7	29.3	50.1	11.4	8.3	660
Sociology	63.5	39.7	18.3	30.1	1.7	365
Other Social Sciences	77.1	50.5	15.4	8.6	6.5	279
Fine Arts	70.4	13.7	12.6	14.7	16.7	1,336
English	83.8	23.9	12.2	4.1	7.8	1,109
History	87.8	30.1	18.7	6.4	2.3	1,102
Language	83.9	30.2	16.0	9.6	4.1	638
Philosophy	83.2	36.6	17.8	10.5	4.2	191
Other Humanities . .	76.7	17.0	23.3	20.5	6.8	176
Education	93.7	9.3	18.7	7.9	1.0	10,373
Business	12.6	14.6	80.1	21.4	4.0	4,402
Law	10.0	17.5	40.3	68.3	3.7	2,428
Social Work	28.1	10.7	13.4	83.2	2.5	644
Other Professions . .	33.9	26.8	42.9	36.4	0.7	2,887
All Graduate Students	53.4	22.7	31.6	-	-	-

N = ...	37,344
NA Career Activities Only	2,162
NA Graduate Field Only	1,786
NA Both	341
Excluded: Not Going to Graduate School	12,383
NA Plans Index	2,428
Total Weighted N = ...	56,664

TABLE 5.28 --Continued

c) Per cent Checking "Teaching," Grouped by Division

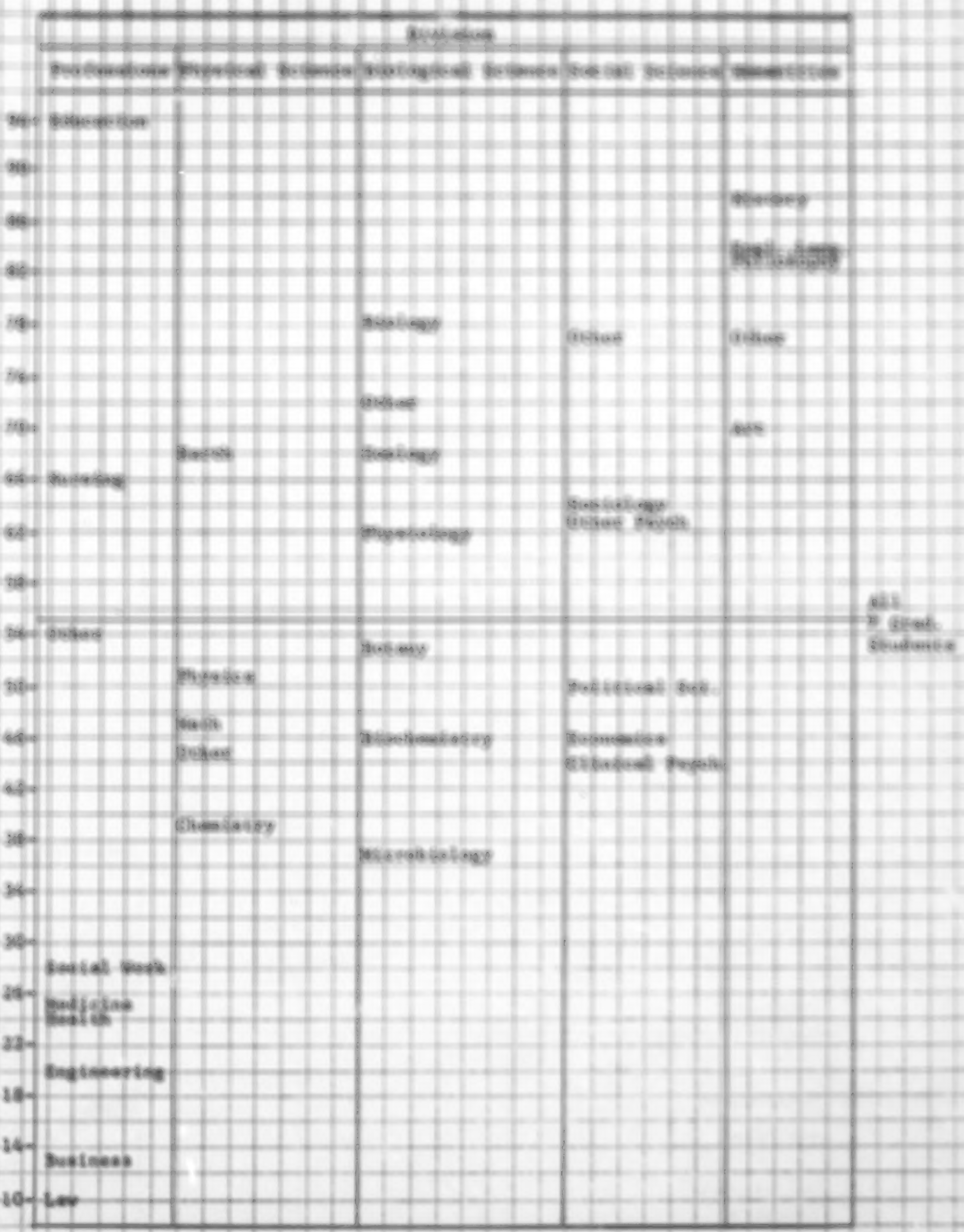


TABLE 7.39--Continued

c) Per cent Checking "Research," Grouped by Division

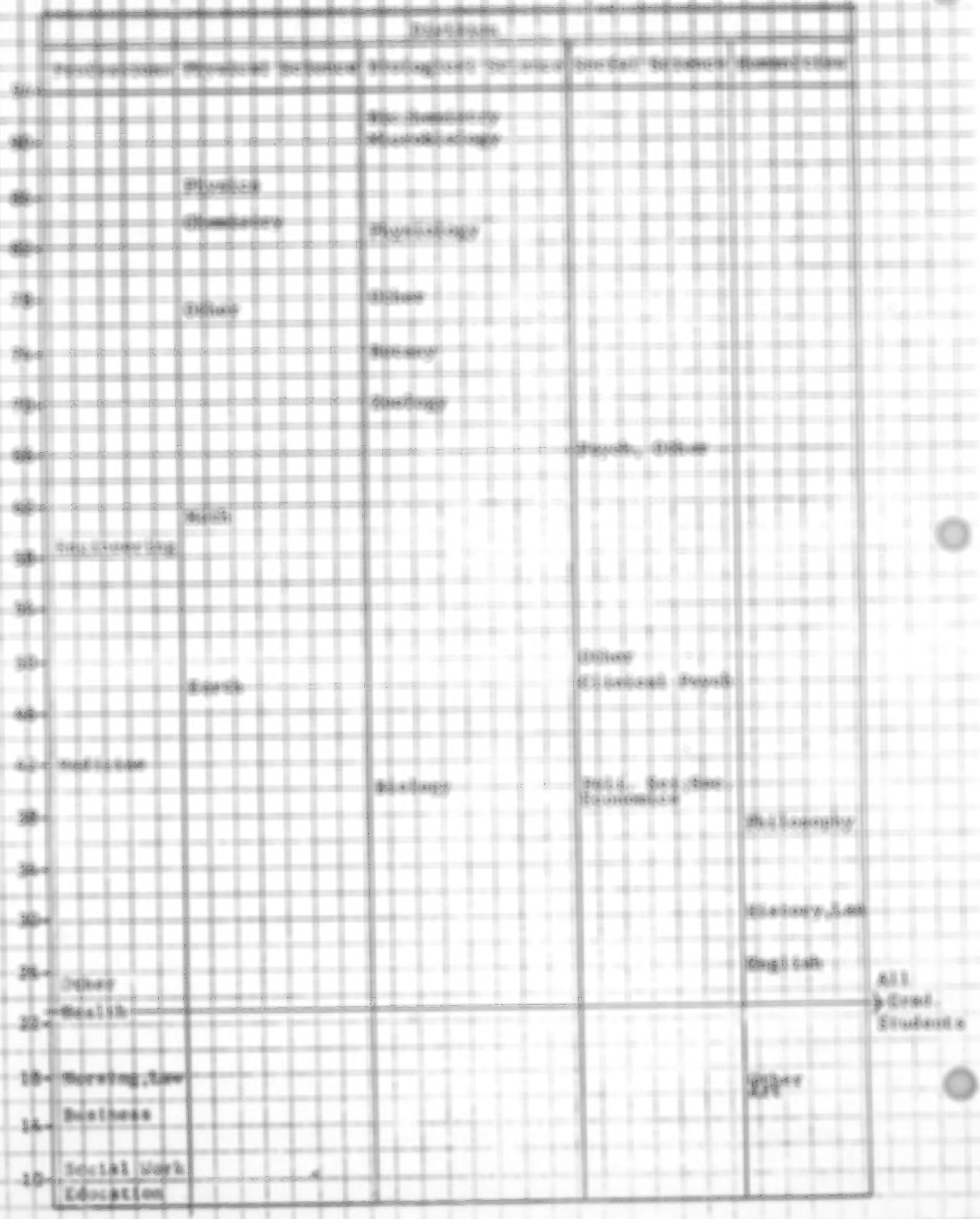


TABLE 7.20--Continued

d) Per cent Research by Per cent Teaching, for Arts and Science Fields

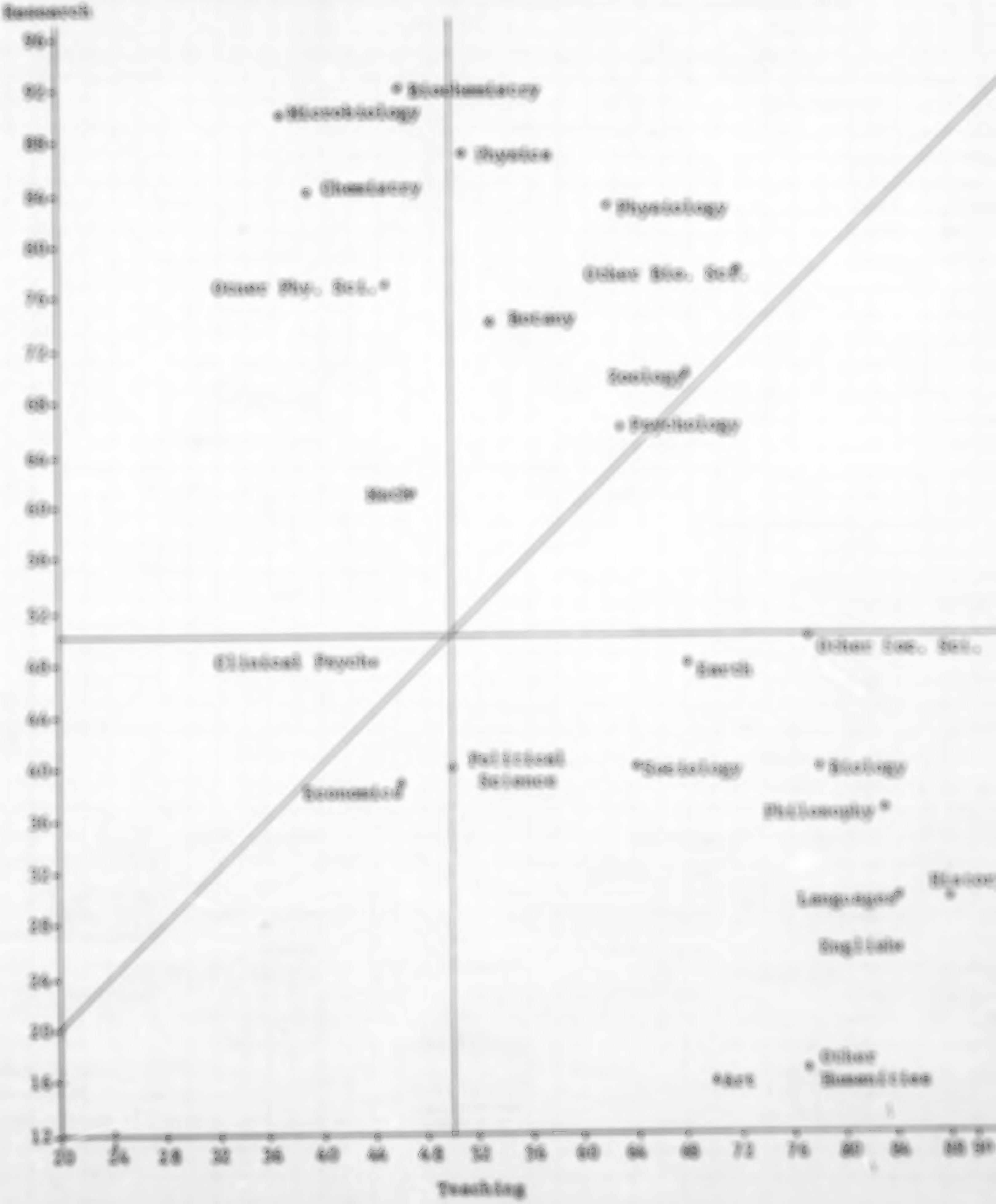


Table 7.20 (Continued)

(c) Per cent Checking "Administration," Grouped by Division

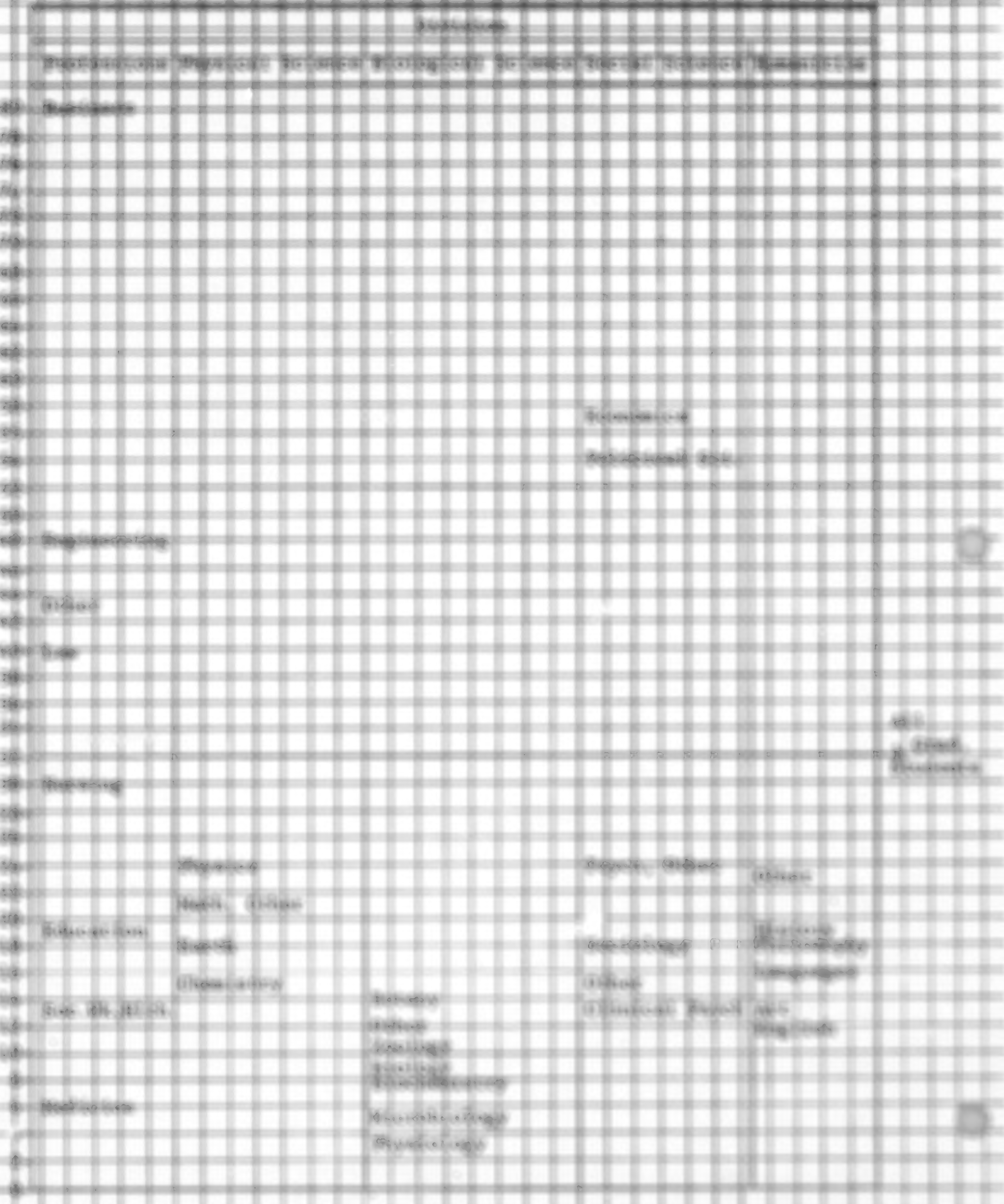


TABLE 7.28--Continued

f) Per cent Checking "Service," Grouped by Division

	Division				
	Professions	Physical Science	Biological Science	Social Science	Humanities
96-	Medicine				
92-					
88-					
	Health			Clinical Psych	
84-	Social Work				
80-	Nursing				
76-					
72-					
68-	Law				
64-					
60-					
40-					
36-	Other				
32-					
				Psych; Sociol	
28-			Physiology		
			Microbiology		
24-					
	Business				
20-					Other
16-					
					Art
12-			Biolo. Other		
			Biochemistry	Political Sci.	
	Engineering			Economics	Lang; Phil.
8-	Education			Other	
			Biology		
		Math			History
			Zoology		
4-					English
		Chem.;Earth;Oth.			
		Physics			
			Botany		
0-					

Turning to Research, [Table 7.28 c)] there is a range from 92 in Biochemistry to nine in Education. Predictably, the Science fields are high, all being 70 per cent or higher except in Mathematics, Earth, and Biology. Humanists are relatively uninterested in research, their top field, Philosophy, having 37 per cent circling the item. Social Science fields span the range between the Natural Sciences and Humanities, Psychology having 66 per cent, while Political Science, Sociology, and Economics are just a hair above Philosophy. In the Professional fields, engineers (59 per cent) and physicians (42 per cent) stand out, while all other professions are 25 per cent or less, Engineering and Medicine having percentages between the Natural Sciences and Humanities.

Table 7.28 d) correlates the per cent interested in teaching and the per cent interested in research for the Arts and Science fields. Despite the oft-claimed ideal of combining teaching and research, the correlation is negative, the research fields being low on teaching, and the teaching fields low on research. Clinical Psychology, Political Science, and Economics, the professionalized Social Science fields, have 50 per cent or less on both functions. Using 50 per cent as a cutting point, the fields high on research and low on teaching in the Arts and Sciences are: Biochemistry, Chemistry, Microbiology, Other Physical Sciences, and Mathematics; the fields high on both are Physics, Physiology, Botany, Other Biological Sciences, Zoology, Psychology, and Other Social Sciences; while the fields high on teaching and low on research are: Earth, Sociology, Biology, Philosophy, Languages, History, English, Art, and Other Humanities. The professors of English and History who are so willing to speak up in the mass media about the dangers of research might note that their graduate students are a somewhat extreme group, no fields being higher in teaching, and only two fields lower in research interest than English and History.

Administrative proclivities [Table 7.28 e)] are oddly distributed. Business (80 per cent) is very high, of course, and among the Professions, Engineering (48 per cent), Other Professions (43 per cent), Law (40 per cent), and Nursing (30 per cent) are relatively high. All other fields have less than 25 per cent checking the item—except for two quasi-professional Social Sciences--Political Science, and Economics, where a little over 50 per cent circle the item. The least organizational-minded fields are Medicine, Biology, Biochemistry, Microbiology, and Physiology, each with a figure of less than 10 per cent.

The fourth function, Service to Patients or Clients, is a specialty of the service professions--Medicine, Clinical Psychology, Health Professions, Social Work and Nursing all being over 75 per cent on the item, although the fact that nurses are as low as 78, along with their interest in teaching and administration, underlines the idea that graduate work in Nursing leads away from the traditional bedside functions. Among less Service oriented fields, Psychology, Sociology, Physiology, and Microbiology all have about a quarter of their students checking the item, and in Law the percentage is 68.

Recruitment to research being one of the major foci of this research, let us return to that function and consider the field differences in the light of sex and academic performance. In most fields (but not Chemistry, Biology, Other Biological Sciences, Art, and Other Humanities) the per cent circling Research increases with API [Table 7.29 a)]. Nevertheless, field differences in research interest are not a function of API variation. Table 7.29 b) plots the raw percentage interested in research against the percentage to be expected if each field consisted of equal proportions from the three API levels. The rank order is very similar in both cases, hence, API composition does not alter the field differences much. Languages and Medicine do lie a little above

TABLE 7.29

GRADUATE FIELD, CAREER ACTIVITIES, AND ACADEMIC PERFORMANCE INDEX

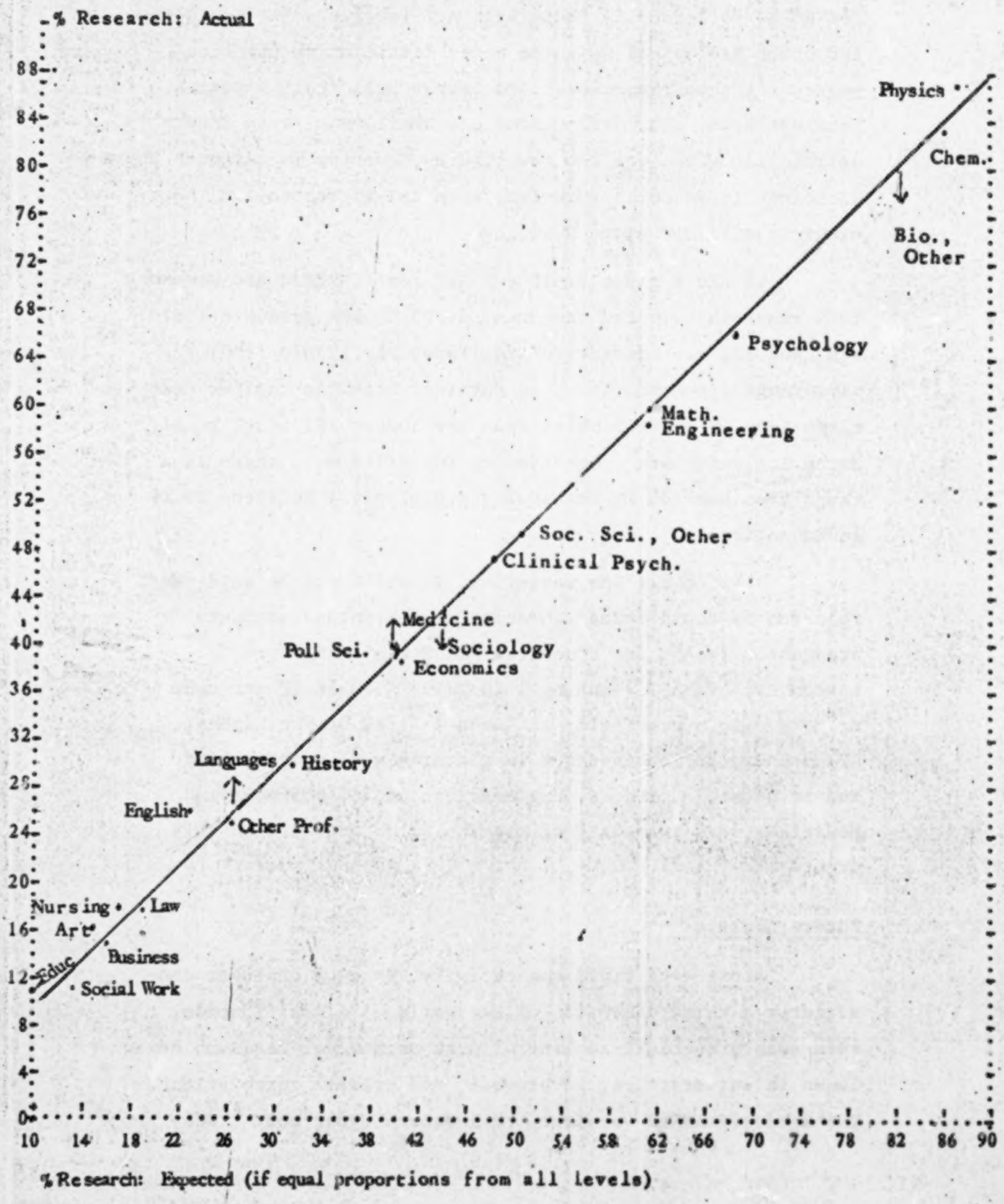
a) Per cent Checking "Research"

Graduate Field	Academic Performance Index					
	Top Fifth		Above Average		Bottom Half	
	Per cent	N	Per cent	N	Per cent	N
Chemistry	87	220	80	307	87	306
Physics	96	303	86	202	75	208
Geology, Geography . .	-	47	56	117	36	102
Mathematics	72	279	61	309	51	280
Other Physical Sciences	92	50	79	63	-	31
Engineering	73	737	58	1,123	51	1,135
Medicine	51	597	36	602	30	221
Nursing	23	105	17	188	11	99
Other Health	-	41	24	246	20	337
Biology	-	48	24	136	50	137
Biochemistry	93	60	97	77	-	46
Botany	-	17	-	29	81	52
Microbiology	-	32	-	36	77	56
Physiology	-	18	-	24	-	46
Zoology	-	36	79	56	54	61
Other Biological Sci. .	95	56	69	93	80	127
Clinical Psychology . .	56	108	53	112	36	133
Other Psychology . . .	84	77	66	93	54	102
Economics	55	114	36	167	29	163
Political Science . . .	49	223	37	263	32	144
Sociology	56	52	49	127	28	166
Other Social Sciences .	69	75	56	124	25	77
Fine Arts	17	327	18	519	11	459
English	34	477	21	415	15	203
History	49	317	31	391	14	392
Languages	39	262	22	250	8	120
Philosophy	42	77	34	77	-	36
Other Humanities . . .	-	22	11	88	22	59
Education	12	1,381	10	4,134	8	4,904
Business	22	590	14	1,639	13	2,206
Law	25	569	17	858	14	975
Social Work	22	106	12	258	6	268
Other Professions . . .	31	501	28	991	20	1,353

N = ...	37,042
NA Graduate Field Only	1,758
NA API Only	522
NA Both	28
NA Career Activities.	2,503
Excluded: Not going to Graduate School	12,383
NA Plans Index	2,428
Total Weighted N = ...	56,664

TABLE 7.29--Continued

b) Per cent Research: Actual by Expected



the line drawn through the points where raw and adjusted figures are identical, suggesting that the research level of these fields is pulled up by their high API levels, while Sociology and Other Biological Sciences are a little below the line, suggesting that their lower API levels pull their research interest down. The differences are small, but it is interesting that while for the raw figures Medicine is slightly above Sociology in research interest, when API is controlled, Sociology is a little above Medicine.

Within a given field and API level, women are somewhat less research oriented than men, so that when graduate field, sex, and API are considered simultaneously (Table 7.30) a wide range appears. Thus, in Physical Sciences the per cent rises from 43 among females from the lowest API level to 87 among Top Fifth men. Considering Top Fifth men, there is a range from over 80 in Physical and Biological Sciences to 21 in Education.

Despite all the variation, it still can be said that research is a widespread interest of the future graduate students. Except for Education and Social Work from the Bottom Half in API, each cell in Table 7.30 is 12 per cent or more. In every field, at least a fifth of the highest API men express an interest in research work of some kind, and in Natural Sciences, Engineering, Social Sciences and Medicine, more than half of the Top Fifth men circled this item.

Future Employer

Along with field and activity, type of employer constitutes a third dimension of occupational classification, even such a specialized line of work as Medical Research being found in universities, government, and private corporations. The schedule asked students to indicate "your most likely

TABLE 7.30

GRADUATE FIELD, CAREER ACTIVITIES, SEX AND A.P.I.

(Per cent Checking "Research")

Graduate Field	Overall Per cent "Research"	A.P.I.					
		Top Fifth		Above Average		Bottom Half	
		Male	Female	Male	Female	Male	Female
Phy. Sci. . . .	74	87 (698)	73 (201)	74 (789)	66 (209)	70 (833)	43 (94)
Bio. Sci. . . .	70	84 (104)	82 (163)	68 (265)	60 (186)	65 (384)	82 (141)
Engineering . .	59	73 (734)	- (3)	58 (1,110)	- (13)	51 (1,130)	- (5)
Social Sciences	45	60 (383)	56 (266)	49 (566)	40 (320)	35 (625)	26 (160)
Medicine . . .	42	52 (554)	- (43)	36 (545)	35 (57)	26 (191)	- (30)
Other Profes. .	25	32 (316)	28 (185)	30 (674)	24 (317)	21 (1,060)	17 (293)
Humanities . .	25	39 (601)	32 (881)	28 (740)	21 (1,000)	13 (690)	13 (579)
Health	21	- (27)	27 (119)	22 (125)	20 (309)	13 (256)	26 (180)
Law	18	25 (547)	- (22)	18 (809)	- (49)	13 (949)	- (26)
Business . . .	15	23 (528)	19 (62)	14 (1,536)	12 (103)	13 (2,064)	15 (142)
Social Work . .	11	- (13)	22 (93)	- (49)	13 (209)	7 (83)	5 (185)
Education . . .	9	21 (307)	9 (1,074)	9 (1,257)	10 (2,877)	8 (2,426)	9 (2,478)

N = ... 37,042
NA, Career Activities Only 2,125
NA, Graduate Field Only 1,758
NA, A.P.I. Only 522
NA, on Two or More Items 406
Excluded from Table:
Not Planning Graduate School 12,383
NA, Plans Index 2,428

Total Weighted N = ... 56,664

when you begin full time work in your anticipated career field? (If you have a definite expectation, circle one; if not, circle the most likely possibilities.)" Twelve alternatives were listed: "Private company with 100 or more employees; Private company with fewer than 100 employees or professional partnership; Family business; Self-Employed; Research organization or institute; College or University or Junior College; Elementary or Secondary School or School System; Other educational institutions; Federal Goverment (U.S.); State or local government; Hospital-Church-Clinic-Welfare Organization, etc.; and Other."

Among graduate students, the most frequent responses were: Elementary or Secondary Education, 35 per cent; Large Business, 24 per cent; College or University, 15 per cent; and Federal Government, 14 per cent, the total for all responses running to 134 per cent which means considerable multiple checking.

Table 7.31 gives the distributions for the 33 graduate fields. Because of the wide scatter, it will perhaps be useful to review the leading choices for each field; numbers in parentheses are per cents:

Professional Fields

1) Engineering--Large Business (69), Federal Government (20)
2) Medicine--Self-employed (76), Hospital or Welfare Organization (34)
3) Nursing--Hospital or Welfare (75)
4) Health--Self-employed (46), Hospital or Welfare (35)
5) Education--Education (88)
6) Business--Large Business (68), Federal Government (16)
7) Law--Small Business (44), Self-employed (30), Federal Government (28)

Professional Fields (Continued)

8) Social Work--Hospital or Welfare (66), State or Local Government (33)

9) Other Professions--Hospital or Welfare (32)

Natural Science

10) Chemistry--Large Business (58), Research Organization (43), College (30)

11) Physics--Research Organization (47), Large Business (44), College (42), Federal Government (33)

12) Earth--College (39), Federal Government (34), Education (33), Large Business (27)

13) Mathematics--Large Business (43), College (26), Federal Government (24), Research Organization (20)

14) Other Physical Science--Research Organization (42), Federal Government (39), College (35), Large Business (29)

15) Biology--Education (61), Research Organization (20)

16) Biochemistry--Research Organization (61), College (36), Large Business (23), Federal Government (22)

17) Botany--Research Organization (36), College (34), Federal Government (31), Education (28)

18) Microbiology--Research Organization (55), College (32), Hospital or Welfare Organization (27), Large Business (21)

19) Physiology--Research Organization (52), College (50), Hospital or Welfare Organization (22)

20) Zoology--College (39), Education (30), Research Organization (27), Federal Government (22)

21) Other Biological Sciences--Research Organization (46), College (34), Federal Government (29), Large Business (20)

Social Sciences and Humanities

22) Clinical Psychology--Hospital or Welfare Organization (64), College (26), Research Organization (24), Federal Government (20)

23) Psychology--College (45), Research Organization (37), Federal Government (24), Large Business (23)

Social Sciences and Humanities (Continued)

24) Economics--Large Business (40), Federal Government (36), College (31)

25) Political Science--Federal Government (58), College (26)

26) Sociology--College (32), Education (27), Hospital or Welfare Organization (20)

27) Other Social Sciences--College (44), Education (35), Research Organization (25), Federal Government (23)

28) Arts--Education (36), College (33)

29) English--College (45), Education (42)

30) History--Education (53), College (37)

31) Languages--College (42), Education (35)

32) Philosophy--College (75)

33) Other Humanities--Education (35), College (27), Large Business (21)

The variety is such as to defy easy generalizations, but the following themes may be noted: The large variety of employers mentioned in the Natural and Social Sciences as contrasted with the Humanities and Professions; Federal Government, while the leading employer in only one field--Political Science--is among the most popular in 17 out of the 33 fields, especially among the Natural Sciences; while Arts and Science graduate training by tradition and structure is designed to prepare students for college and university careers, it is seldom the most common future employer for graduate students except in Humanities; the tremendous popularity of "Research Organization or Institute" among students in Natural Sciences and Social Sciences.

Whether these expectations will be realized or not is open to question (and research), but it is clear that in most fields of study, the students see a number of alternative employers. Thus, it is interesting to conclude this section

TABLE 7.31

GRADUATE FIELD AND CAREER EMPLOYER

Graduate Field	Career Employer												Total	
	Private Company													
	100 or More Employees	Less Than 100 Employees	Family Business	Self-Employed	Research Organization	College	Elementary, Secondary School	Other Educational	Federal Government	State or Local Government	Hospital, Church Welfare	Other	Per cent	N
Chemistry . . .	58	8	0	0	43	30	6	0	17	3	2	1	168	839
Physics	44	5	1	2	47	42	8	0	33	0	1	0	183	721
Geology/Geogr..	27	10	0	5	13	39	33	0	34	14	4	1	180	270
Mathematics . .	43	5	1	1	20	26	18	1	24	2	0	1	142	870
Other Phy. Sci.	29	5	0	9	42	35	12	3	39	5	2	1	182	153
Engineering . .	69	10	1	3	14	8	1	0	20	6	0	2	134	3,036
Medicine . . .	1	5	1	76	16	9	1	0	6	2	34	2	153	1,438
Nursing	0	0	0	0	2	9	5	2	8	12	75	3	116	402
Other Health. .	5	5	1	46	10	5	7	0	7	3	35	2	126	636
Biology	7	1	1	5	20	12	61	1	11	3	2	1	125	325
Biochemistry. .	23	2	2	2	61	36	4	0	22	1	19	0	172	185
Botany	8	2	0	0	36	34	28	0	31	9	0	0	148	104
Microbiology. .	21	4	1	2	55	32	4	1	18	11	27	0	176	126
Physiology . .	13	5	1	7	52	50	4	7	11	3	22	0	175	94
Zoology	6	1	0	5	27	39	30	0	22	14	6	6	156	155
Other Bio. Sci.	20	5	1	5	46	34	15	0	29	15	8	1	179	285
Clinical Psych.	6	3	0	15	24	26	15	2	20	18	64	1	194	357
Other Psychology	23	3	2	7	37	45	15	1	24	7	17	0	181	275
Economics . . .	40	7	2	3	8	31	5	0	36	6	1	4	143	450
Political Sci .	12	6	3	3	7	26	15	0	58	13	2	9	154	650
Sociology . . .	12	6	0	3	15	32	27	2	14	18	20	0	149	348
Other Soc. Sci.	9	2	3	3	25	44	35	0	23	7	3	4	158	280
Fine Arts . . .	16	16	2	13	2	33	36	2	6	1	5	8	140	1,339
English	11	5	0	5	2	45	42	1	6	2	3	3	125	1,105
History	6	2	0	2	2	37	53	2	17	4	6	3	134	1,099
Languages . . .	12	3	1	2	3	42	35	1	17	0	2	6	124	643
Philosophy . .	6	3	0	3	2	75	9	0	3	1	9	4	115	190
Other Humanities	21	9	1	5	2	27	35	0	14	6	17	2	139	170
Education . . .	3	1	0	1	1	7	88	1	3	3	4	1	113	10,599
Business . . .	68	18	5	6	3	3	2	0	16	3	1	3	128	4,498
Law	27	44	6	30	1	3	2	0	28	11	0	5	157	2,426
Social Work . .	3	2	1	1	5	3	10	0	13	33	66	3	140	644
Other Profess..	16	11	1	6	7	15	17	1	15	11	32	5	137	2,888
All Grad. Studs.	24	9	2	9	8	15	35	1	14	5	10	2	-	-

N = ...	37,600
NA Career Employer Only	1,790
NA Graduate Field Only	2,126
NA Both	337
Excluded: Planning Never to Go to Graduate School . . .	12,383
NA Plans	2,428
Total Weighted N = ...	56,664

and the research report by considering how--if the students' expectations are fulfilled--talent as measured by our ubiquitous API index will be shared among future employers. Will private business be able to outbid non-profit and government organizations; will colleges and universities get a fair share of the talent they have nurtured; will self-employment attract the high or low API student? Table 7.32 gives the per cent in the Top Fifth in API among men by career field and future employer in order to answer these questions. (Because of multiple answers, the same student may appear in several cells of the table.) Even limiting the table to eight future employers makes for a complicated set of figures, and the situation varies with the field. Nevertheless, some generalizations may be drawn.

Beginning with the "non-profit" sector, a distinct rank order appears. Colleges and Universities have the highest API levels, Research Organization the second highest, and Education the lowest. Thus, in Physical Sciences, for the prospective college staffs 49 per cent are in the Top Fifth, for Research Organization people 38 per cent are in the Top Fifth, and in Education the percentage is eight. Federal Government and Private Welfare organizations fall in between, generally above Education but below the Research Organizations in API level.

Turning to the private sector employers--Large Business, Small Business and Professional Partnership, and Self-Employment, no distinct pattern occurs, these three types being generally, but not always, superior to Education in API levels, and in all comparisons save one below the levels for College or Research Organization. There certainly is no evidence that big business has a greater attraction than the Federal Government for the high API student, just about as many comparisons favoring the one as the other.

TABLE 7.32

GRADUATE FIELD, CAREER EMPLOYER, AND ACADEMIC PERFORMANCE INDEX AMONG MEN*

(Per cent Top Fifth A.P.I.)

Graduate Field	Career Employer**							
	Self-Employed	Private Company		Elementary or Secondary Educational System	Hospital, Church or Welfare Organization	Federal Government	Research Organization	College or University
		Less than 100 Employees	100 or More Employees					
Medicine	43 (1,011)	25 (63)	- (13)	- (11)	44 (430)	30 (100)	52 (202)	69 (118)
Engineering	21 (94)	31 (316)	26 (2,059)	- (32)	- (8)	17 (768)	46 (420)	52 (244)
Physical Science . .	14 (147)	20 (291)	20 (1,576)	8 (420)	3 (60)	23 (848)	38 (842)	49 (873)
Humanities	23 (145)	12 (122)	15 (202)	18 (645)	22 (100)	21 (254)	- (14)	45 (1,007)
Social Science . . .	20 (97)	13 (87)	16 (321)	8 (204)	13 (184)	24 (740)	31 (207)	37 (553)
Law	25 (688)	31 (195)	20 (627)	- (29)	- (10)	25 (857)	- (24)	31 (70)
Other Professions .	15 (143)	22 (251)	14 (344)	11 (160)	14 (750)	12 (572)	13 (126)	31 (307)
Business	7 (268)	12 (727)	14 (2,889)	- (40)	- (40)	7 (710)	18 (90)	24 (127)
Biological Science .	- (45)	- (22)	9 (94)	5 (191)	- (33)	11 (261)	17 (261)	23 (250)
Education	2 (63)	8 (77)	6 (170)	7 (3,390)	10 (180)	11 (288)	- (36)	17 (424)

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*The following categories are excluded: Women; Graduate Fields of Health and Social Work, because of small case base; Career Employer categories of Family Business, State and local government, and other; and those not planning to go to graduate school.

**Individuals may be included in more than one "career employer" category.

In short, the general picture is that the academic world which produced them has the greatest attraction for the students who are most successful in its eyes; the elementary and secondary schools which prepared them attract the less successful grade getters, and other employers fall in between without much systematic difference.

Thus we end our analysis of advanced study as we began it, with the over-riding fact of this research. Despite the harsh criticism of higher education from within and without, judged by the market research criterion of satisfied customers, American colleges and universities are a tremendous success. A surprisingly high proportion of their customers are demanding still more after four years of undergraduate study, and the most promising of these by the standards of academia show a disproportionate tendency toward the academy which suggests that higher education has an addictive quality.

APPENDICES

I. SELECTED TABULATIONS BY UNDERGRADUATE MAJOR

II. NATIONAL PROJECTIONS OF GRADUATE SCHOOL ATTENDANCE

III. NOTES ON THE VALIDITY OF THE ACADEMIC PERFORMANCE INDEX

IV. LISTING OF SAMPLE COLLEGES AND UNIVERSITIES

V. SAMPLE DESIGN

VI. THE QUESTIONNAIRE

APPENDIX I.

SELECTED TABULATIONS BY UNDERGRADUATE MAJOR

In the text of this report, the students' undergraduate major fields were not treated as variables in the analyses. Undergraduate major field is strongly correlated with career preference, and it was felt that of the two, career preference would be more important. That is, it was assumed that in the case of a discrepancy, Education majors aiming for careers in Engineering would behave more like engineers than like educators.

Because of the large amount of research and official statistics reported by undergraduate major, it was felt that it would be useful to make available selected tabulations by undergraduate major.

The following data are included:

Sex

Per cent Female for detailed breakdown of undergraduate majors (A-I.1) and for the dichotomy, Arts and Science v. Professional [A-I.5 b)].

Academic Performance Index

Distribution by detailed breakdown of undergraduate majors (A-I.1) and for the dichotomy, Arts and Science v. Professional [A-I.5 b)].

Sex by Academic Performance Index

Not reported separately, but can be calculated for detailed undergraduate major field in A-I.3, grouped undergraduate major in A-I.4, and for Arts and Science v. Professional in A-I.5 c).

Plans

Distribution by detailed undergraduate major (A-I.2), grouped major (A-I.4), and Arts and Science v. Professional [A-I.5 a)].

Per cent planning graduate school next year, controlling for Sex and API, by detailed undergraduate major (A-I.3), grouped undergraduate major (A-I.4), and Arts and Science v. Professional (A-I.5).

Graduate Major

Graduate and undergraduate major fields are cross-tabulated in Tables A-I.6 and A-I.7 for those students classified as "Next Year" or "Later" on the Plans Index.

Table A-I.6 percentages the data to show the undergraduate origins of those planning graduate study in a particular field, reported in detail in A-I.6 a) and with undergraduate major grouped in A-I.6 b).

Table A-I.7 percentages the same data to show the graduate destinations of particular undergraduate majors, destinations reported in detail in A-I.7 a), and grouped in A-I.7 b).

TABLE A-I.1

UNDERGRADUATE MAJOR AND SEX; UNDERGRADUATE MAJOR AND ACADEMIC PERFORMANCE

Undergraduate Major	Per cent Female	Academic Performance Index			Total	
		Top Fifth	Above Average	Bottom Half	Per cent	N
Pre-medical	6.0	32.2	49.0	18.6	99.8	487
Physics	7.7	43.2	28.3	28.4	99.9	830
Other Biological Sciences[a].	33.1	26.0	30.6	43.3	99.9	738
Chemistry	25.2	27.7	36.1	36.1	99.9	1,482
Biology	41.4	19.0	39.9	41.0	99.9	1,318
Psychology[b]	43.9	25.3	37.2	37.4	99.9	1,336
Humanities[c]	53.3	30.4	38.5	31.0	99.9	8,560
Other Social Sciences[d] . .	33.1	21.6	38.9	39.4	99.9	4,334
Mathematics	32.8	31.1	33.5	35.2	99.8	1,298
Other Physical Sciences[e] .	9.2	18.2	38.3	43.4	99.9	467
Engineering	6.0	19.7	34.6	45.6	99.9	4,967
Other Professions[f]	51.2	14.7	33.9	51.2	99.8	2,081
Agriculture[g]	0.7	8.9	28.8	62.1	99.8	734
Not elsewhere classified(NEC)	20.2	13.1	25.4	61.4	99.9	679
Education	68.6	12.7	39.8	47.4	99.9	14,393
Business[h]	9.2	8.5	30.1	61.3	99.9	7,038
Other Health[i]	76.2	18.1	42.4	39.3	99.8	1,753

N = ... 52,495
NA, Plans 2,428
NA, API 830
NA, Field 911
Total Weighted N = ... 56,664

[a] Anatomy, Biochemistry, Botany, Biophysics, Entomology, Genetics, Microbiology, Pathology, Pharmacology, Other Biological Science, Physiology, Zoology.

[b] Clinical Psychology, Social Psychology, Industrial and Personal Psychology, Experimental Psychology, Other Psychology.

[c] Fine and Applied Arts, English, Creative Writing, Classical Language and Literature, History, Modern Foreign Language and Literature, Philosophy, Humanities, General.

[d] Anthropology, Archeology, Economics, Area and Region Study, Political Science and Government, Sociology, Social Science, General.

[e] Astronomy, Astrophysics, Geography, Geology, Geophysics, Oceanography, Metallurgy, Meterology, Physical Science, General.

[f] Architecture, City Planning, Journalism, Radio-Television-Communication, Library Science, Archives, Theology, Religion, Foreign Service, Law, Pre-law, Social Group Work, Home Economics.

[g] Veterinary and Pre-veterinary, Agricultural Science, Forestry, Farming.

[h] Advertising, Public Relations, Other Business, Accounting, Public Administration, Secretarial Science, Military Service.

[i] Dentistry and Pre-dentistry, Nursing, Optometry, Pharmacy, Physical Therapy, Occupational Therapy, Medical Technology, Dental Hygiene, Other Health.

TABLE A-I.2

UNDERGRADUATE MAJOR AND PLANS

Undergraduate Major	Per cent of Sample	Plans Index				Total		Total Per cent Next Year
		Next Year		Per cent Later	Per cent Never	Per cent	N	
		Per cent Accepted	Per cent Other					
Pre-Med. . . .	0.9	80.6	9.8	7.4	2.2	100.0	500	90.4
Physics	1.5	50.5	14.5	29.9	4.8	99.7	838	65.1
Other Bio. Sci.	1.4	47.0	12.3	27.9	12.6	99.8	761	59.3
Chemistry . . .	2.8	46.3	9.5	33.5	10.5	99.8	1,491	55.9
Biology	2.5	42.2	13.1	32.0	12.6	99.9	1,343	55.3
Psychology . .	2.5	33.4	13.4	31.6	21.5	99.9	1,347	46.8
Humanities . .	16.3	30.0	13.3	36.4	20.1	99.8	8,680	43.4
Other Soc. Sci.	8.2	31.6	11.1	38.9	18.2	99.8	4,367	42.7
Mathematics . .	2.4	28.5	13.2	38.7	19.5	99.9	1,310	41.7
Other Phy. Sci.	0.9	25.4	11.2	46.5	18.7	101.8	479	36.7
Engineering . .	9.2	18.8	13.9	45.9	21.2	99.8	5,030	32.8
Other Prof. . .	4.0	21.8	10.4	39.4	28.2	99.8	2,127	32.3
Agriculture . .	1.4	16.9	8.2	29.0	45.7	99.8	750	25.2
NEC	1.3	10.0	12.4	38.2	39.2	99.8	698	22.4
Education . . .	27.6	7.4	14.2	61.3	16.8	99.4	4,646	21.7
Business . . .	13.3	7.8	9.0	42.4	40.7	99.9	7,151	16.8
Other Health .	3.3	9.7	6.9	37.4	45.7	99.7	1,773	16.7
Total .	99.5			N = ...			53,291	
N = ...	55,546			NA, Plans			2,428	
NA, Field .	1,118			NA, Field			945	
Total Wtd.N=	56,664			Total Weighted N = .			56,664	

TABLE A-I.3

UNDERGRADUATE MAJOR AND PLANS, CONTROLLING FOR SEX AND ACADEMIC PERFORMANCE

Undergraduate Major	Per cent Next Year on Plans Among ...					
	Male			Female		
	Top Fifth	Above Average	Bottom Half	Top Fifth	Above Average	Bottom Half
Pre-Med. .	98.7 (154)	92.9 (227)	81.8 (77)	- (3)	- (12)	- (14)
Physics .	85.5 (325)	65.7 (207)	37.6 (234)	- (34)	- (28)	- (2)
Other Bio. Sci. . .	94.6 (113)	84.1 (139)	53.3 (242)	48.1 (79)	37.9 (87)	23.0 (78)
Chemistry.	85.2 (285)	73.9 (384)	38.8 (440)	53.1 (126)	32.4 (151)	14.5 (96)
Biology .	93.2 (149)	73.7 (270)	51.6 (354)	53.9 (102)	37.1 (256)	38.5 (187)
Psychology	78.5 (149)	65.0 (272)	42.6 (328)	58.4 (190)	24.0 (225)	17.4 (172)
Humanities	74.6 (1,130)	55.1 (1,409)	36.8 (1,456)	48.3 (1,476)	31.4 (1,887)	20.8 (1,202)
Other Soc. Sci. . .	70.0 (612)	55.9 (1,096)	33.0 (1,192)	44.4 (326)	27.9 (591)	21.0 (517)
Mathematics	81.0 (238)	52.8 (280)	21.7 (354)	39.1 (166)	21.7 (156)	23.0 (104)
Other Phy. Sci. . .	76.7 (73)	40.6 (160)	23.0 (191)	- (12)	- (19)	- (12)
Engineering	61.7 (972)	35.9 (1,709)	18.2 (2,256)	- (7)	- (12)	- (11)
Other Prof.	64.8 (125)	42.1 (332)	44.0 (559)	23.0 (182)	25.6 (375)	13.9 (508)
Agriculture	51.5 (64)	33.0 (212)	17.4 (453)	- (2)	- (0)	- (3)
NEC . . .	45.4 (66)	44.4 (117)	15.3 (359)	- (23)	12.5 (56)	12.0 (58)
Education.	43.8 (319)	39.9 (1,393)	23.0 (2,810)	22.0 (1,511)	20.1 (4,343)	14.3 (4,017)
Business .	37.8 (526)	23.2 (1,913)	11.8 (3,954)	3.8 (77)	14.4 (207)	11.6 (361)
Other Health	36.8 (57)	35.7 (137)	25.4 (224)	18.7 (262)	14.3 (608)	6.6 (465)

N = ...	52,495
NA, Field	911
NA, API	830
NA, Plans	2,428
Total Weighted N = ...	56,664

TABLE A-I.4

UNDERGRADUATE MAJOR (GROUPED) AND PLANS, CONTROLLING FOR SEX AND ACADEMIC PERFORMANCE

Undergraduate Major	Per cent Next Year on Plans Among ...						
	Male			Female			Total
	Top Fifth	Above Average	Bottom Half	Top Fifth	Above Average	Bottom Half	
Biological Sciences .	93.8 (262)	77.2 (409)	52.3 (596)	51.3 (181)	37.3 (343)	33.9 (265)	56.7 (2,104)
Physical Sciences . .	83.6 (921)	61.3 (1,031)	31.1 (1,219)	44.9 (338)	30.7 (354)	18.6 (214)	51.0 (4,118)
Social Sciences . . .	71.7 (761)	51.9 (1,368)	35.1 (1,520)	49.6 (516)	26.8 (816)	20.1 (689)	43.7 (5,714)
Humanities	74.6 (1,130)	55.1 (1,409)	36.8 (1,456)	48.3 (1,476)	31.4 (1,887)	20.8 (1,202)	43.4 (8,680)
Other Professions . .	64.6 (1,372)	41.4 (2,617)	23.9 (3,569)	21.7 (456)	19.4 (1,007)	10.4 (1,001)	32.1 (10,180)
NEC	45.4 (66)	44.4 (117)	15.3 (359)	- (23)	12.5 (56)	12.0 (58)	22.4 (698)
Education	43.8 (319)	39.9 (1,393)	23.0 (2,810)	22.0 (1,511)	20.1 (4,343)	14.3 (4,017)	21.7 (14,646)
Business	37.8 (526)	23.2 (1,913)	11.8 (3,954)	3.8 (77)	14.4 (207)	11.6 (361)	16.8 (7,151)

N = ... 52,495
NA, Field 911
NA, API 830
NA, Plans 2,428
Total Weighted N = ... 56,664

TABLE A-I.5

UNDERGRADUATE MAJOR (ARTS AND SCIENCE VS. PROFESSIONAL), PLANS, SEX AND ACADEMIC PERFORMANCE INDEX

a) Undergraduate Major and Plans

Undergraduate Major	Per cent of Sample	Plans Index				Total		Total Per cent Next Year
		Next Year		Later	Never	Per cent	N	
		Ac-cepted	Other					
Arts and Science . . .	38.8	33.8	12.5	35.9	17.6	99.8	20,616	46.3
Professional	59.8	11.7	12.1	50.3	25.7	99.8	31,977	23.9
NEC	1.3	10.0	12.4	38.2	39.2	99.8	698	22.4
Total Per cent	99.9							

N = ... 55,546
NA, Field 1,118
Total Weighted N = . . . 56,664

N = ... 53,291
NA, Field 945
NA, Plans 2,428
Total Weighted N = . 56,664

b) Undergraduate Major and Sex; Undergraduate Major and Academic Performance

Undergraduate Field	Per cent Female	Academic Performance Index			Total	
		Top Fifth	Above Average	Bottom Half	Per cent	N
Arts and Science	40.7	27.4	37.4	35.1	99.9	20.363
Professional .	41.3	13.5	36.4	49.9	99.8	31,453
NEC	20.2	13.1	25.4	61.4	99.9	679

N = ... 52,495
NA, Field 911
NA, Plans 2,428
NA, A.P.I. 830
Total Weighted N = ... 56,664

c) Undergraduate Major and Plans, Controlling for Sex and A.P.I

Under-graduate Major	Per cent Next Year on Plans Among...					
	Male			Female		
	Top Fifth	Above Average	Bottom Half	Top Fifth	Above Average	Bottom Half
Arts and Science	78.2 (3,074)	59.6 (4,217)	36.7 (4,791)	48.3 (2,511)	30.8 (3,400)	21.9 (2,370)
Profession-al . . .	55.2 (2,217)	35.0 (5,923)	19.1 (10,333)	21.2 (2,044)	19.7 (5,557)	13.4 (5,379)
NEC . . .	1.3 (66)	44.4 (117)	15.3 (359)	- (23)	12.5 (56)	12.0 (58)

N = ... 52,495
NA, Field 911
NA, A.P.I 830
NA, Plans 2,428
Total Weighted N = ... 56,664

TABLE A-1.6

UNDERGRADUATE MAJOR OF STUDENTS EXPECTING TO ENTER VARIOU

a) Detailed Fields

(Per cent of Prospective Graduate Students Whose Undergradua

Anticipated Graduate Field	Undergraduate																		
	Chemistry	Physics	Earth	Math.	Other Phy. Sci.	Biology	Bio. Chem	Botany	Microbio	Physiology	Zoology	Other Bio. Sci.	Clinical Psychology	Other Psych.	Economics	Pol.Sci.	Sociol.	Other Soc.Sci.	Fine Arts
Chemistry	89	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physics	1	74	0	8	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Geol.-Geog. (Earth)	0	0	69	1	0	0	0	0	0	0	0	0	0	0	1	0	0	4	0
Mathematics	1	3	0	68	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Other Physical Sciences	3	19	10	4	26	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Biology	1	0	0	1	0	65	1	1	0	0	2	0	0	0	0	0	0	0	1
Biochemistry	55	0	0	0	0	11	7	0	2	1	6	1	0	0	0	0	0	0	0
Botany	2	1	0	0	0	35	0	41	2	0	7	0	0	0	0	0	0	1	0
Microbiology	2	0	0	1	0	34	2	3	36	0	8	0	0	0	0	0	0	0	0
Physiology	8	0	0	1	0	48	1	1	0	14	13	0	0	0	0	0	0	0	0
Zoology	0	2	0	0	0	51	0	0	0	0	35	0	0	0	0	0	0	0	1
Other Biological Sciences	3	3	0	0	0	34	1	2	1	0	17	13	0	0	0	0	0	0	0
Clinical Psychology	0	0	0	0	0	0	0	0	0	0	0	0	44	28	0	0	1	0	2
Other Psychology	0	0	0	4	0	0	0	0	0	0	1	0	1	59	0	0	6	0	0
Economics	0	0	0	3	0	0	0	0	0	0	0	0	0	0	61	2	2	2	0
Political Science	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2	52	1	1	2
Sociology	0	0	2	1	0	0	0	0	0	0	0	2	0	1	4	1	56	3	0
Other Social Sciences	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	9	5	28	3
Fine Arts	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	61
English	0	0	0	0	0	0	.0	0	0	0	0	0	0	0	0	1	0	0	2
Languages	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
History	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	1	4	1
Philosophy	0	1	0	6	1	1	0	1	0	0	0	0	0	1	0	1	1	0	1
Other Humanities	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	1	4
Engineering	1	2	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Medicine	13	1	0	1	0	20	2	0	1	0	8	1	1	3	1	1	1	0	1
Nursing	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	1	0	0
Other Health	5	1	0	0	0	20	0	0	2	0	7	0	1	1	0	1	1	0	1
Education	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	2	1	2
Business	1	0	0	1	0	0	0	0	0	0	0	0	0	1	8	2	1	0	1
Law	1	1	0	1	0	0	0	0	0	0	0	0	0	2	8	19	2	1	1
Social Work	0	0	0	0	0	2	0	0	0	0	0	0	2	9	0	1	36	4	0
Other Professions	1	0	1	1	0	1	0	0	0	0	0	0	1	1	1	3	3	1	2

N = ...
NA, Undergraduat
NA, Graduate Maj
NA, Undergradua
Excluded from Ta
Not Planning G
NA, Plans . .
Total Weighted N

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*Due to rounding, total percentages deviate from 100 in some cases.

TABLE A-1.6

R OF STUDENTS EXPECTING TO ENTER VARIOUS GRADUATE FIELDS

a) Detailed Fields

ive Graduate Students Whose Undergraduate Major Was. . .)

Undergraduate Major																											Total	
Bio. Chem	Botany	Microbio.	Physiology	Zoology	Other Bio. Sci.	Clinical Psychology	Other Psych.	Economics	Pol.Sci.	Sociol.	Other Soc.Sci.	Fine Arts	English	Language	History	Philosophy	Other Humanities	Engineer.	Medicine	Nursing	Other Health	Education	Business	Law	Social Work	Other Profes.	Per cent*	N
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	1	5	0	0	0	1	100	857
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	0	0	0	5	0	0	0	1	100	726
0	0	0	0	0	0	0	0	1	0	0	4	0	1	0	5	0	0	2	0	0	0	16	1	0	0	0	100	272
0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	7	0	0	1	13	2	0	0	3	100	899
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	19	1	0	0	11	1	1	0	2	102	158
1	1	0	0	2	0	0	0	0	0	0	0	1	0	0	2	0	0	0	1	0	1	22	1	0	0	1	100	363
7	0	2	1	6	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	10	1	0	0	0	4	102	188
0	41	2	0	7	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6	0	0	0	7	102	106
2	3	36	0	8	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	10	2	0	0	0	1	101	130
1	1	0	14	13	0	0	0	0	0	0	0	0	0	0	1	1	0	0	4	0	3	2	0	0	0	2	99	92
0	0	0	0	35	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	11	0	0	0	0	100	158
1	2	1	0	17	13	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	8	7	0	0	0	6	97	290
0	0	0	0	0	0	44	28	0	0	1	0	2	5	1	0	2	0	0	0	0	0	11	2	0	2	1	99	371
0	0	0	0	1	0	1	59	0	0	6	0	0	4	0	0	0	0	3	0	1	0	11	9	0	0	1	100	285
0	0	0	0	0	0	0	0	61	2	2	2	0	1	0	7	0	0	1	0	0	0	1	16	0	0	3	99	458
0	0	0	0	0	0	0	1	2	52	1	1	2	1	3	20	2	1	1	0	0	0	4	3	0	0	4	99	688
0	0	0	0	0	2	0	1	4	1	56	3	0	1	0	6	0	0	0	0	0	0	12	10	0	1	2	102	376
0	0	0	0	0	0	0	1	0	9	5	28	3	2	4	12	3	0	0	0	1	0	24	0	0	0	4	98	286
0	0	0	0	0	0	0	0	0	1	1	0	61	6	1	2	1	0	0	0	0	0	20	1	0	0	2	99	1,413
0	0	0	0	0	0	0	0	0	1	0	0	2	78	1	2	1	1	0	0	0	0	11	1	0	0	2	100	1,192
0	0	0	0	0	0	0	0	0	1	1	0	2	6	62	1	1	1	1	0	1	0	14	1	0	0	3	97	718
0	0	0	0	0	0	0	0	0	2	1	4	1	1	1	68	1	1	0	0	0	0	15	2	0	0	2	102	1,124
0	1	0	0	0	0	0	1	0	1	1	0	1	15	2	2	50	0	0	0	0	1	7	8	0	0	5	104	202
0	0	0	0	0	0	0	1	0	1	1	1	4	16	8	3	1	16	3	1	4	1	35	2	0	0	4	103	201
0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	90	0	0	0	1	2	0	0	1	99	3,043
2	0	1	0	8	1	1	3	1	1	1	0	1	2	2	3	1	1	1	30	1	3	1	1	0	0	1	102	1,436
0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	91	0	4	0	0	0	1	100	429
0	0	2	0	7	0	1	1	0	1	1	0	1	1	0	2	0	0	0	1	2	33	13	2	0	0	6	100	655
0	0	0	0	0	0	0	1	0	1	2	1	2	2	1	3	0	0	0	0	1	0	81	2	0	0	1	100	11,572
0	0	0	0	0	0	0	1	8	2	1	0	1	2	1	2	0	0	13	0	0	0	2	59	0	0	4	98	4,519
0	0	0	0	0	0	0	2	8	19	2	1	1	6	1	14	1	1	5	0	0	0	3	24	5	0	2	98	2,440
0	0	0	0	0	0	2	9	0	1	36	4	0	2	2	4	1	0	0	0	0	0	11	2	0	20	4	100	721
0	0	0	0	0	0	1	1	1	3	3	1	2	5	1	6	4	1	3	0	1	0	17	5	0	0	42	101	3,003

N =	39,371
NA, Undergraduate Major	355
NA, Graduate Major	1,792
NA, Undergraduate Major and Graduate Major	335
Excluded from Table:	
Not Planning Graduate School Ever	12,383
NA, Plans	2,428
Total Weighted N =	56,664

00 in some cases.

TABLE A-I[illegible]--Continued

b) Data in Table a) Grouped

Anticipated Graduate Field	Undergraduate Major					Total		Other Undergraduate Majors Contributing 10 Per cent or More of Prospective Graduate Students
Arts and Science	Phy. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Prof.	Per cent	N	
Chemistry	90.7	0.4	0.2	0.8	7.8	99.9	857	--
Physics	82.8	1.7	0.0	0.2	15.3	100.0	726	--
Geog.,Geol. (Earth) .	69.8	0.4	4.7	7.1	18.0	100.0	272	Education . . (15.8)
Mathematics	71.8	0.0	1.1	0.8	26.2	99.9	899	Education . . (13.0)
Other Phy. Sci. . . .	61.4	3.8	0.0	0.6	34.1	99.9	158	Physics (19.0) Eng. (19.0), Education (11.4)
Biology	2.2	68.4	1.2	3.0	25.4	100.2	363	Education (21.5)
Biochemistry	54.8	27.0	0.0	0.0	18.1	99.9	188	Chemistry (54.8), Biol. (10.6)
Botany	2.8	84.0	0.9	0.0	12.3	100.0	106	Biology (34.9)
Microbiology	2.3	82.3	0.0	2.3	13.1	100.0	130	Biology (33.8), Health (10.0)
Physiology	8.7	77.1	2.2	0.0	12.0	100.0	92	Biology (47.8), Zoology (13.0)
Zoology	1.9	86.7	0.0	0.6	10.8	100.0	158	Biology (51.3), Education (10.8)
Other Bio. Sci. . .	6.8	67.9	0.6	0.6	23.7	99.6	290	Biology (34.1), Zoology (17.2)
Clinical Psychology .	0.6	0.0	72.8	9.8	17.0	100.2	371	Psychology (27.5) Education (11.3)
Other Psychology . .	4.3	0.7	65.7	4.3	25.4	100.4	285	Education (10.9)
Economics	3.3	0.4	66.5	8.3	21.4	99.9	458	Business (15.7)
Political Science . .	1.8	0.0	57.1	28.4	12.7	100.0	688	History (20.2)
Sociology	2.7	1.6	64.0	7.8	24.3	100.4	376	Education (12.0)
Other Soc. Sci. . .	1.4	1.5	43.3	24.5	29.5	100.2	286	History (11.9) Education (24.5)
Fine Arts	1.4	1.0	2.4	70.9	24.3	100.0	1,413	Education (19.8)
English	0.8	0.1	1.3	83.8	14.3	100.3	1,192	Education (10.9)
Languages	2.7	0.1	3.9	74.3	18.9	99.9	718	Education (13.8)
History	2.1	0.1	7.4	71.9	18.5	100.0	1,124	Education (14.7)
Philosophy	7.9	1.0	1.5	68.9	20.8	100.1	202	English (14.9)
Other Humanities . .	0.5	0.0	2.5	47.8	49.3	100.1	201	English (16.4) Education (35.3)

TABLE A-I.6 b)--Continued

Anticipated Graduate Field	Undergraduate Major			Total		Other Undergraduate Majors Contributing 10 Per cent or More of Prospective Graduate Students
Professional	Arts and Science	Same Profes.	Other Profes.	Per cent	N	
Engineering	5.9	87.9	4.3	100.1	3,043	--
Medicine	63.1	30.2	6.6	99.9	1,436	Chemistry (13.4), Biology (19.9)
Nursing	4.4	0.0	95.5	99.9	429	--
Other Health	42.8	33.3	24.0	100.1	655	Biology (19.5), Educ. (12.8)
Education	15.2	80.6	4.2	100.0	11,572	--
Business	20.0	59.4	20.6	100.0	4,519	Engineering (13.3)
Law	60.3	27.7	16.1	100.1	2,440	Polit. Sci. (19.3), History (14.2), Business (23.7)
Social Work	62.9	19.8	17.4	100.1	721	Sociology (36.2) Education (11.0)
All Other Professions . .	33.0	41.6	25.6	100.1	3,003	Education (16.6)

N = ...	39,371
NA, Undergraduate Major	355
NA, Graduate Major	1,792
NA, Undergraduate Major and Graduate Major	335
Excluded from Table:	
Not Planning Graduate School Ever	12,383
NA, Plans	2,428
Total Weighted N = ...	56,664

TABLE A-I.7

ANTICIPATED GRADUATE FIELD OF STUDENTS IN VARIOUS UNDERGRADUATE FIELDS AMONG

a) Detailed Fields

Undergraduate Major	Anticipated Graduat																		
	Chemistry	Physics	Earth	Mathematics	Other Phy. Sci.	Biology	Biochem.	Botany	Microbiol.	Physiology	Zoology	Other Bio. Sci.	Clinical Psychology	Other Psychology	Economics	Pol. Sci.	Sociology	Other Soc. Sci.	Fine Arts
Chemistry	59	0	0	1	0	0	8	0	0	1	0	1	0	0	0	0	0	0	1
Physics	0	69	0	3	4	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Geo.-Geog. (Earth)	0	0	63	0	5	0	0	0	0	0	0	0	0	0	0	1	2	1	1
Mathematics	1	6	0	58	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1
Other Phy. Sciences	1	1	0	2	47	1	0	0	0	0	0	1	0	0	0	1	0	0	0
Biology	0	1	0	0	1	20	2	3	4	4	7	9	0	0	0	0	0	0	1
Biochemistry	2	0	0	0	0	6	29	0	4	2	0	4	0	0	0	0	0	0	0
Botany	0	0	2	0	0	6	0	65	6	2	0	9	0	0	0	0	0	0	0
Microbiology	0	0	0	0	0	1	3	2	51	0	0	2	0	0	0	0	0	0	0
Physiology	0	0	0	0	0	0	4	0	0	48	0	4	0	0	0	0	0	4	0
Zoology	1	0	0	0	0	2	4	2	3	4	16	14	0	1	0	0	0	0	0
Other Biological Sciences	0	0	0	0	0	0	2	0	0	0	0	54	0	0	0	0	9	0	4
Clinical Psychology	0	0	0	0	0	0	0	0	0	0	0	0	66	1	0	0	0	0	0
Other Psychology	0	0	0	0	0	0	0	0	0	0	0	0	15	25	0	1	1	0	0
Economics	0	0	0	1	0	0	0	0	0	0	0	0	0	0	29	2	1	0	0
Political Science	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	30	0	2	1
Sociology	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	22	2	1
Other Social Science	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	2	3	24	1
Fine Arts	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	67
English	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	5
Language	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	2	2
History	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	6	1	2	1
Philosophy	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	2	3
Other Humanities	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	0
Engineering	0	2	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Medicine	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Nursing	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1
Other Health	2	0	0	2	0	1	5	0	4	1	0	7	0	0	0	0	0	0	0
Education	0	0	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
Business	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2	1	1	0	1
Law	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Social Work	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	0
Other Professions	0	1	0	1	0	0	0	0	1	0	0	1	0	0	1	1	0	1	2

N = ...
NA, Undergraduate
NA, Graduate Field
NA, Undergraduate
Excluded from Table
Not Planning Gra
NA, Plans . . .

Total Weighted N =

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*Due to rounding, total percentages deviate from 100 in some cases

TABLE A-I.7

TS IN VARIOUS UNDERGRADUATE FIELDS AMONG THOSE EXPECTING TO GO ON NEXT YEAR OR LATER
a) Detailed Fields

Anticipated Graduate Field																											Total	
Biochem.	Botany	Microbiol.	Physiology	Zoology	Other Bio. Sci.	Clinical Psychology	Other Psychology	Economics	Pol. Sci.	Sociology	Other Soc. Sci.	Fine Arts	English	Language	History	Philosophy	Other Hum.	Engineering	Medicine	Nursing	Other Health	Education	Business	Law	Social Work	Other Prof.	Per`cent*	N
8	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2	15	0	3	4	3	1	0	2	100	1,292
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	10	1	0	0	3	3	2	0	1	98	781
0	0	0	0	0	0	0	0	0	1	2	1	1	0	0	2	0	0	3	1	0	0	10	4	1	0	6	100	298
0	0	0	0	0	0	0	1	1	1	0	0	1	0	2	1	1	0	4	2	0	0	8	6	3	0	3	100	1,042
0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	10	7	0	0	19	2	3	1	1	98	88
2	3	4	4	7	9	0	0	0	0	0	0	1	0	0	0	0	0	0	25	1	11	8	1	1	1	2	102	1,150
29	0	4	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	2	0	2	2	0	0	100	49
0	65	6	2	0	9	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0	0	6	102	66
3	2	51	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	17	0	11	2	1	0	0	8	99	92
4	0	0	48	0	4	0	0	0	0	0	4	0	0	0	0	0	0	0	11	0	7	22	0	0	0	0	100	27
4	2	3	4	16	14	0	1	0	0	0	0	0	0	0	0	0	0	0	32	1	14	4	1	0	0	4	103	346
2	0	0	0	0	54	0	0	0	0	9	0	4	0	0	0	0	0	0	22	0	3	0	2	2	0	3	101	68
0	0	0	0	0	0	66	1	0	0	0	0	0	0	0	0	0	0	0	3	0	2	11	2	3	5	6	99	247
0	0	0	0	0	0	15	25	0	1	1	0	0	0	0	0	0	0	0	7	0	1	19	7	6	10	6	98	667
0	0	0	0	0	0	0	0	29	2	1	0	0	0	0	0	0	0	2	1	0	0	3	36	21	0	3	99	964
0	0	0	0	0	0	0	0	1	30	0	2	1	1	1	2	0	0	0	1	0	0	6	6	40	1	7	99	1,185
0	0	0	0	0	0	0	2	1	1	22	2	1	0	1	1	0	0	0	1	0	0	19	5	6	28	9	99	942
0	0	0	0	0	0	0	0	2	2	3	24	1	0	1	13	0	0	0	2	0	0	19	5	7	8	7	97	329
0	0	0	0	0	0	1	0	0	1	0	1	67	2	1	1	0	1	0	1	0	1	14	3	1	0	6	101	1,298
0	0	0	0	0	0	1	1	0	0	0	0	5	48	2	1	2	2	0	2	0	0	15	4	8	1	8	100	1,912
0	0	0	0	0	0	0	0	0	3	0	2	2	2	59	1	1	2	0	3	0	0	9	5	4	2	6	102	751
0	0	0	0	0	0	0	0	2	6	1	2	1	1	1	35	0	0	0	2	0	1	17	5	16	1	8	100	2,178
0	0	0	0	0	0	2	0	0	3	0	2	3	2	2	2	27	0	0	3	0	0	7	2	8	2	33	98	367
0	0	0	0	0	0	0	0	0	5	0	1	0	6	6	5	0	22	0	5	0	0	17	6	17	0	11	102	151
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72	0	0	1	1	16	3	0	2	100	3,813
0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	93	0	2	1	0	1	0	0	99	469
1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	2	0	1	72	2	12	0	0	0	6	99	547
5	0	4	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	59	4	2	2	0	1	100	372
0	1	0	0	0	0	0	0	1	0	0	1	2	1	1	1	0	1	0	0	0	1	80	1	1	1	4	99	11,601
0	0	0	0	0	0	0	1	2	1	1	0	1	0	0	1	0	0	2	0	0	0	5	67	15	0	3	100	3,992
0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	2	94	0	2	102	133
0	0	0	0	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	7	0	1	82	4	100	174
0	0	1	0	0	1	0	0	1	1	0	1	2	1	1	1	1	1	2	1	0	2	7	8	3	2	63	102	1,980

N =	39,371
NA, Undergraduate Major	355
NA, Graduate Field	1,792
NA, Undergraduate Major and Graduate Field	335
Excluded from Table:	
Not Planning Graduate School Ever	12,383
NA, Plans	2,428
Total Weighted N =	56,664

100 in some cases

TABLE A-I.7--Continued

b) Data in Table a) Grouped

Undergraduate Major	Anticipated Graduate Field					Total		Fields Other than Original Major with 10 Per cent or More
Arts and Science	Phy. Sci.	Bio. Sci.	Soc. Sci.	Hum.	Prof.	Per cent	N	
Chemistry . . .	60.6	9.7	0.2	1.0	28.7	100.2	1,292	Medicine (14.9)
Physics	76.3	1.9	0.3	1.6	19.7	99.8	781	--
Geo.-Geol.(Earth)	68.4	0.0	3.7	3.6	24.2	99.9	298	Education (10.1)
Mathematics . .	65.7	0.6	3.8	3.2	25.5	98.8	1,042	Engineering (10.2), Educ. (19.3)
Other Phy. Sci.	51.1	2.2	1.1	1.1	44.2	99.7	88	--
Biology	1.6	48.4	0.4	1.1	48.2	99.7	1,150	Medicine (24.9) Health Flds.(11.1)
Biochemistry .	2.0	44.9	0.0	0.0	52.9	99.8	49	Medicine (46.9)
Botany	1.5	88.0	0.0	1.5	9.1	100.1	66	--
Microbiology .	0.0	59.9	0.0	1.1	39.2	100.2	92	Medicine (17.4) Health Flds.(10.9)
Physiology . .	0.0	55.5	3.7	0.0	40.7	99.9	27	Medicine (11.1), Education (22.2)
Zoology	0.6	44.2	0.9	0.6	53.9	100.2	346	Med. (32.1), Other Bio.Sci.(14.4), Other Health (13.6)
Other Bio. Sci.	0.0	55.9	8.8	4.4	30.9	100.0	68	Medicine (22.1)
Clinical Psy. .	0.0	0.0	68.0	0.8	31.1	99.9	247	Education (10.5)
Other Psychol..	0.2	0.2	42.2	1.4	56.1	100.1	667	Clin. Psy. (15.3), Educ. (19.0)
Economics . . .	1.0	0.2	32.0	1.0	65.6	99.8	964	Business (35.8), Law (20.6)
Pol. Sci. . . .	0.2	0.0	33.7	5.0	61.2	100.1	1,185	Law (39.7)
Sociology . . .	0.1	0.1	27.1	3.7	68.9	99.9	942	Education (19.2), Soc. Work (27.7)
Other Soc. Sci.	3.3	0.9	31.8	15.8	48.1	99.9	329	History (13.4), Education (18.9)
Fine Arts . . .	0.1	0.3	2.1	70.8	26.8	100.1	1,298	Education (14.4)
English	0.5	0.2	2.5	59.3	37.7	100.2	1,912	Education (14.5)
Language . . .	1.0	0.0	4.9	66.3	27.8	100.0	751	--
History	1.0	0.6	10.8	38.4	49.4	100.2	2,178	Education (16.9), Law (15.9)
Philosophy . .	0.0	0.6	8.0	35.9	55.7	100.2	367	Other Prof. (33.0)
Other Hum. . .	0.7	0.0	5.3	38.5	55.7	100.2	151	Education (16.6), Law (17.2) Other (10.6)

TABLE A-I.7 b)--Continued

Undergraduate Major	Anticipated Graduate Field			Total		Fields Other than Original Major with 10 Per cent or More
Professional	Arts and Science	Same Profes.	Other Profes.	Per cent	N	
Engineering	6.0	71.3	22.9	100.2	3,813	Business (15.7)
Pre-Medicine	3.8	92.5	3.5	99.8	469	--
Nursing	6.1	71.5	22.6	100.2	547	Education (11.9)
Other Health	22.6	58.6	19.0	100.2	372	--
Education	13.3	80.4	7.8	101.5	11,601	--
Business	8.3	67.3	26.1	101.7	3,992	Law (14.3)
Law	2.4	94.0	3.8	100.2	133	--
Social Work	5.7	82.2	12.1	100.0	174	--
Other Professions . . .	13.6	63.0	24.3	100.9	1,980	--
	N = ...				39,371	
	NA, Undergraduate Major				355	
	NA, Graduate Field				1,792	
	NA, Undergraduate Major and Graduate Field				335	
	Excluded from Table:					
	Not Planning Graduate School Ever				12,383	
	NA, Plans				2,428	
	Total Weighted N = ...				56,664	

APPENDIX II

NATIONAL PROJECTIONS OF GRADUATE SCHOOL ATTENDANCE

The projections in the following tables were arrived at, in the Summer of 1961, in the following manner:

1) From U. S. Office of Education publications we obtained projections of the number of bachelor's and first professional degrees to be awarded in 1959-60 and 1961-62.

2) On the basis of 1) above, the number of graduates for the year 1960-61 was interpolated.

3) First professional degrees which are not also undergraduate bachelor's degrees were subtracted from the figures arrived at in 2) above.

    a) It was ascertained which institutions offer first professional degrees which are not undergraduate bachelor's degrees. Students under five-year baccalaureat programs in fields like Engineering and Architecture were included. Students being graduated from a professional school which required two or more years of undergraduate work prior to admission were viewed as receiving graduate degrees and were excluded.

    b) The total number of first professional degrees which are not undergraduate bachelor's degrees was estimated from Office of Education reports of degrees awarded by field and institution during the academic year 1958-59.

4) On the basis of reports from the sample schools, it was estimated that approximately 25 per cent of bachelor's degrees awarded by American colleges and universities are conferred at times other than June. The total resulting from step 3) above, was therefore multiplied by 75 per cent. This resulted in an estimate of 265,000 bachelor's degrees awarded in June, 1961.

5) The projected 265,000 graduates were distributed among fields and API categories within fields according to their proportional representation in the sample.

TABLE A-II.1

PROJECTED MEMBERS OF JUNE, 1961 COLLEGE GRADUATES PLANNING GRADUATE OR PROFESSIONAL STUDY, BY FIELD, AMONG THOSE WHO INDICATED A SPECIFIC GRADUATE OR PROFESSIONAL FIELD

(Note: Projections are rounded to the nearest ten)

a) Broad Field Groupings

Field of Study	Plans to Attend Graduate School						Total* All Times
	Fall, 1961			Later			
	Accepted	Other	Total	Definite Date	No Definite Date	Total	
Chemistry	2,190	410	2,600	1,210	580	1,790	4,390
Math. and Statistics	1,380	730	2,110	1,630	840	2,470	4,580
Physics.	1,840	540	2,380	980	340	1,320	3,700
Other Physical Sci..	720	410	1,130	760	330	1,090	2,220
Biological Sciences.	2,490	1,190	3,680	2,100	1,070	3,170	6,850
Social Sciences . .	4,460	2,200	6,660	5,360	2,030	7,390	14,050
Humanities	7,350	4,230	11,580	9,140	4,220	13,360	24,940
Education	6,440	11,020	17,460	27,930	14,060	41,990	59,450
Engineering	4,050	2,950	7,000	5,820	2,730	8,550	15,550
Medicine	5,810	640	6,450	710	160	870	7,320
Other Health Prof. .	1,920	670	2,590	1,720	1,160	2,880	5,470
Law	6,640	1,790	8,430	3,390	670	4,060	12,490
Social Work	690	520	1,210	1,800	670	2,470	3,680
Other Prof.	3,990	1,690	5,680	3,330	1,620	4,950	10,630
Business	3,320	3,600	6,920	10,850	5,310	16,160	23,080
Agriculture	540	230	770	640	290	930	1,700
"No Near Equivalent"	620	330	950	700	370	1,070	2,020
Total . . .	54,450	33,150	87,600	78,070	36,450	114,520	202,120

Total All Times	202,120
Not Going	62,970
Total	265,090

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*The careful reader will note that totals in Tables A-II.1 and A-II.2 are not identical. This is due to the different numbers of NA's in the two tables. The totals were not corrected for these few NA's because the projections are approximations only.

TABLE A-II.1--Continued

b) Field Groupings with Science Fields Specified

Field of Study	Plans to Attend Graduate School						Total* All Times
	Fall, 1961			Later			
	Accepted	Other	Total	Definite Date	No Definite Date	Total	
Chemistry	2,190	410	2,600	1,210	580	1,790	4,390
Math. and Statistics.	1,380	730	2,110	1,630	840	2,470	4,580
Physics	1,840	540	2,380	980	340	1,320	3,700
Astrom./Astrophys. . .	90	50	140	40	20	60	200
Geography	180	140	320	420	160	580	900
Geol./Geophysics . .	230	90	320	130	30	160	480
Oceanography	60	10	70	20	30	50	120
Metallurgy	50	10	60	40	20	60	120
Meterology	60	50	110	30	50	80	190
Phy., Gen. & Other .	50	60	110	80	20	100	210
Anatomy	120	20	140	80	20	100	240
Biology	340	400	740	740	370	1,110	1,850
Biochemistry	380	110	490	340	130	470	960
Botany	250	90	340	110	90	200	540
Biophysics	70	10	80	70	-	70	150
Entomology	100	20	120	90	50	140	260
Genetics	150	30	180	100	40	140	320
Microbiology	230	80	310	230	130	360	670
Pathology	-	10	10	10	10	20	30
Pharmacology	60	10	70	30	30	60	130
Physiology	220	150	370	100	30	130	500
Zoology	370	150	520	130	150	280	800
Other Biology	200	110	310	70	20	90	400
Social Sciences . . .	4,460	2,200	6,660	5,360	2,030	7,390	14,050
Humanities	7,350	4,230	11,580	9,140	4,220	13,360	24,940
Education	6,440	11,020	17,460	27,930	14,060	41,990	59,450
Engineering	4,050	2,950	7,000	5,820	2,730	8,550	15,550
Medicine	5,810	640	6,450	710	160	870	7,320
Dentistry	950	120	1,070	170	60	230	1,300
Other Health Prof. .	970	550	1,520	1,550	1,100	2,650	4,170
Law	6,640	1,790	8,430	3,390	670	4,060	12,490
Social Work	690	520	1,210	1,800	670	2,470	3,680
Other Professions . .	3,990	1,690	5,680	3,330	1,620	4,950	10,630
Business	3,320	3,600	6,920	10,850	5,310	16,160	23,080
Agriculture	540	230	770	640	290	930	1,700
"No Near Equivalent".	620	330	950	700	370	1,070	2,020
Total	54,450	33,150	87,600	78,070	36,450	114,520	202,120

Total All Times All Fields	202,120
Not Going	62,970
Total	265,090

TABLE A-II.2

PROJECTED NUMBERS OF JUNE, 1961 COLLEGE GRADUATES PLANNING GRADUATE OR PROFESSIONAL STUDY BY FIELD AND ACADEMIC PERFORMANCE, AMONG THOSE WHO INDICATED A SPECIFIC GRADUATE OR PROFESSIONAL FIELD

(Note: Projections are rounded to the nearest ten)

Field of Study	Academic Performance*	Plans to Attend Graduate School						Total All Times
		Fall, 1961			Later			
		Accepted	Other	Total	Definite Date	No Definite Date	Total	
Chemistry . . .	H	860	60	920	180	40	220	1,140
	M	840	190	1,030	450	170	620	1,650
	L	490	170	660	580	380	960	1,620
Math & Statis..	H	880	150	1,030	360	130	490	1,520
	M	380	350	730	550	350	900	1,630
	L	120	230	350	740	360	1,100	1,450
Physics	H	1,240	90	1,330	230	10	240	1,570
	M	450	260	710	270	80	350	1,060
	L	160	190	350	480	250	730	1,080
Other Phy. Sciences . .	H	370	30	400	60	40	100	500
	M	300	210	510	340	100	440	950
	L	50	150	200	310	170	480	680
Bio. Sci. . . .	H	780	140	920	310	190	500	1,420
	M	1,040	400	1,440	630	410	1,040	2,480
	L	650	640	1,290	1,060	460	1,520	2,810
Social Sci. . .	H	2,090	350	2,440	990	390	1,380	3,820
	M	1,760	930	2,690	1,910	590	2,500	5,190
	L	570	910	1,480	2,450	1,030	3,480	4,960
Humanities . .	H	4,180	1,050	5,230	2,180	830	3,010	8,240
	M	2,260	1,950	4,210	3,800	1,670	5,470	9,680
	L	880	1,160	2,040	3,200	1,680	4,880	6,920

*H = Top 20
M = Above Average
L = Bottom Half

TABLE A-II.2--Continued

Field of Study	Academic Performance*	Plans to Attend Graduate School						Total All Times
		Fall, 1961			Later			
		Accepted	Other	Total	Definite Date	No Definite Date	Total	
Education . . .	H	1,780	1,330	3,110	3,510	1,450	4,960	8,070
	M	2,840	4,640	7,480	10,650	5,500	16,150	23,630
	L	1,820	5,020	6,840	13,690	7,000	20,690	27,530
Engineering . .	H	2,170	610	2,780	810	230	1,040	3,820
	M	1,380	1,230	2,610	2,180	1,010	3,190	5,800
	L	520	1,120	1,640	2,810	1,490	4,300	5,940
Medicine . . .	H	2,870	90	2,960	100	10	110	3,070
	M	2,430	310	2,740	280	80	360	3,100
	L	490	240	730	340	70	410	1,140
Other Health .	H	210	100	310	320	170	490	800
	M	740	240	980	820	540	1,360	2,340
	L	980	330	1,310	520	450	970	2,280
Law	H	2,280	150	2,430	490	20	510	2,940
	M	2,640	610	3,250	1,050	190	1,240	4,490
	L	1,750	1,020	2,770	1,840	460	2,300	5,070
Social Work . .	H	170	20	190	300	120	420	610
	M	320	350	670	580	250	830	1,500
	L	190	160	350	890	300	1,190	1,540
Other Professions .	H	1,020	230	1,250	410	250	660	1,910
	M	1,370	540	1,910	1,190	460	1,650	3,560
	L	1,610	920	2,530	1,680	920	2,600	5,130
Business . . .	H	1,150	410	1,560	1,070	420	1,490	3,050
	M	1,500	1,470	2,970	3,990	1,690	5,680	8,650
	L	680	1,720	2,400	5,800	3,180	8,980	11,380
Agriculture . .	H	100	40	140	60	20	80	220
	M	290	40	330	240	100	340	670
	L	150	140	290	340	170	510	800
"No Near Equivalent" .	H	260	70	330	100	40	140	470
	M	220	130	350	200	110	310	660
	L	140	120	260	380	230	610	870
Total .		54,420	33,010	87,430	77,720	36,260	113,980	201,410

Total All Times 201,410
Not Going 63,660
Total 265,070

APPENDIX III

NOTES ON THE VALIDITY OF THE ACADEMIC PERFORMANCE INDEX

Throughout the report, numerous associations have been reported involving the Academic Performance Index (API), a composite measure based on the student's cumulative grade point average and the quality of his school in terms of the intellectual calibre of its freshmen. It has been shown that API is associated with Sex, SES, Hometown, Race, Career Choice, Plans for Graduate Study, award of a stipend, application for a stipend, interest in research, and type of future employer.

While the findings in themselves provide some reassurance about the validity of the measure (any measure on which higher SES students, those from larger cities, whites, future physicians, students going on for graduate study immediately, students who apply for and receive stipends, students who want to do research, etc., all tend to receive high scores, is undoubtedly getting at something like academic performance), it would be helpful to have independent evidence on its validity. We shall here present two sets of data which provide some further information--Law School Admissions Test Scores and National Merit Scholarship Finalists.

Law School Admissions Test Scores

Since the completion of the report, it has become possible to use scores on the Law School Admissions Test of the Educational Testing Service as a validating instrument. The opportunity arose in connection with an analysis of data on recruitment to Law by Seymour Warkov of NORC.

The Law School Admissions Test (LSAT) is a three and one-half hour paper and pencil test required for admission to some eighty law schools constituting about two-thirds of the fully accredited law schools in the United States. The test purports to measure "comprehension of written language, facility with words and with data presented in graphic form, and reasoning power"[1] and was designed to "be a measure of aptitude for the study of law and (to) be as free as possible of questions assuming a knowledge of specific course work....to make it possible for applicants having the mental abilities necessary for the study of law to make good scores on the test regardless of the undergraduate curricula they had engaged in."

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[1] Materials in quotation marks and most descriptive information on the LSAT are taken from John A. Winterbottom and A. Pemberton Johnson, "The Law School Admissions Test Program," Educational Testing Service, September 1961 (litho.).

As for the validity of the LSAT itself, Winterbottom and Johnson write, "..ETS has conducted over forty validity studies based on LSAT scores. The criterion characteristically used has been first year average grades (in law school). The range of average correlations for the years 1948-57 is .38 to .59." A 1959 study in six law schools gives an average correlation of .52 and a correlation of .64 when the data are adjusted to allow for the fact that since the test itself is used for selection, the correlations are lowered through the screening of low LSAT scorers who presumably would get very low grades in law school.[2]

The Educational Testing Service kindly searched its files for LSAT scores of men in the NORC survey who gave Law as their current or sometime preference for future study or employment. A weighted total of 1,595 cases with both API and LSAT scores was located.

If the assumptions underlying the API are correct (and the LSAT is a measure of academic achievement), when LSAT scores are tabulated simultaneously by GPA and the School Quality Index, three sets of relationships should obtain:

1) Within a school quality level, mean LSAT scores should increase with increasing GPA.
2) Within a GPA level, mean LSAT scores should increase with school quality.
3) Considering the cutting points used (as indicated below), the following differences in LSAT should hold:

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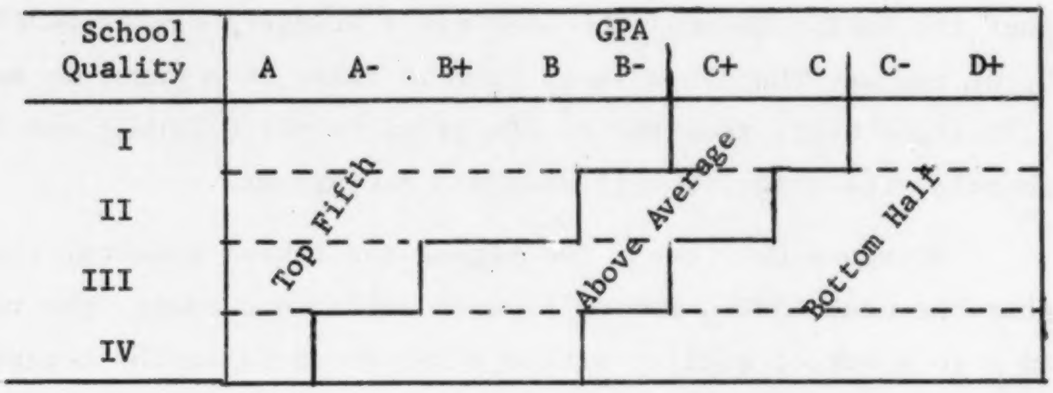
[2] Barbara Pitcher and Marjorie Olsen, "The Law School Admission Test as a Predictor of First-Year Law School Grades, 1957-58," Educational Testing Service, April, 1959 (mimeo.).


School Quality
GPA
A
A-
B+
B
B-
C+
C
C-
D+
I
II
III
IV
Top Fifth
Above Average
Bottom Half

GPA	Quality	should surpass		
B-	I	B-II	B+III	A-IV
B	II		B+III	A-IV
B+	III			A-IV
C	I	C-II	C+III	B-IV
C+	II		C+III	B-IV
B-	III			B-IV

Even by lowering our criterion for cell size with weighted data from 50 to 20 cases, some cells are too small to justify tabulations, but the general nature of the relationship is clear.

TABLE A-III.1

MEAN LSAT - WEIGHTED N

School Quality	GPA					
	≥ A-	B+	B	B-	C+	≤ C
I	621 (26)	612 (41)	588 (75)	585 (90)	574 (59)	548 (37)
II	[579 (21)]		528 (31)	543 (38)	506 (33)	- (9)
III	576 (47)	551 (105)	515 (168)	491 (245)	477 (239)	465 (143)
IV	[574 (21)]		490 (30)	445 (55)	430 (48)	433 (34)

Both components of API are associated with LSAT scores.

Within a school quality group, the higher the GPA, the higher the LSAT. Because the LSAT has a standard deviation of 100, we can say that in A level schools there is a range in means of .73 sigma units from the A- GPA group to the C level; and in C schools, the range is 1.11 standard deviations.

Within a GPA level, the higher the school quality, the higher the mean LSAT. For cells with sufficient cases, the range from A to D school quality within a GPA group is in the neighborhood of one standard deviation.

It is interesting to note that C+ students in the A schools have means about the same as B+ and A students in C and D level schools, and C or worse students in A level schools surpass B students in levels B, C, and D.

As for the justification of the cutting points, unfortunately there are not sufficient cases to the specific hypotheses set forth. However, it may be said that no cell stands out as grossly misclassified by the cutting points. Thus, there is no cell in the "Bottom Half" classification with an LSAT mean as high or higher than any cell in the other two groups, and save for the B students in level II (who may represent sampling error because their LSAT is lower than for B- students in level II) there is no cell classified as "Above Average" which surpasses a cell classified as "Top Fifth."

Because LSAT takers are not representative of men in general and the validity of the LSAT is still being explored, these figures should not be taken as indicating that there are no further questions about the API. However, it is encouraging to find that the two components of API do correlate with independent tests purporting to tap academic potential.

Undergraduate Major, National Merit Finalists, Sex, and Field of Study

One of the persistent problems involved in the API measure is that of comparability across fields of study. While the question of comparability across schools was attacked by correcting the raw GPA's by means of the School Quality Index, no assumptions were made about differences in the meaning of GPA's in various fields of study.

Although there was no practical method of establishing a discount for inflated academic currency, a number of persons in and out of NORC have been bothered about possible biases introduced by curricular differences. Although the question is usually put more diplomatically, behind it lies the ominous proposition, "You are treating a B average in 'Industrial Arts Education' as representing the same degree of academic performance as one in pure Mathematics." If pursued relentlessly, such a question is really unanswerable because no one can define academic achievement completely independent of subject matter and different subject matter is different. However, we can put the problem into a somewhat more realistic frame of reference by examining data on GPA, undergraduate major, school quality, sex, and National Merit Scholarship status.

To begin with, the School Quality Index itself unwittingly serves to establish a discount system, for undergraduate majors are differentially distributed according to school quality.

TABLE A-III.2

UNDERGRADUATE MAJOR AND SCHOOL QUALITY

School Quality	Undergraduate Major									
	Pre-Med.	Soc. Sci.	Hum.	Phy. Sci.	Eng.	Bio. Sci.	All Students	Other Prof.	Bus.	Edu.
I-II	13	23	26	19	24	16	14	10	5	3
III	74	61	55	58	51	58	55	54	63	48
IV	13	16	20	23	26	26	31	36	31	49
Total	100%	100%	101%	100%	101%	100%	100%	100%	99%	100%
N = .	(508)	(5,736)	(8,954)	(4,237)	(5,084)	(2,135)	(53,916)	(4,770)	(7,435)	(15,057)

Total Weighted N = ... 53,916*

*Total differs from 56,664 because of "No answer" and "Not elsewhere classified" on undergraduate major and because of 975 NA's on grade point average, Table A-III.2 being calculated from a more complex tabulation including GPA.

There is no simple rank order, but rather a series of patterns. Education students appear especially concentrated in level IV; Humanities, Social Sciences, Physical Sciences, and Engineering students are disproportionately concentrated in levels I and II; Pre-Medicine is concentrated in level III; and so on. Thus, even if there were no differences in the GPA's of students in various undergraduate majors within a quality level, Education students would have to receive higher grades than Physical Sciences, Social Sciences, and Humanities students to obtain the same API classification.

More important, however, are the persistent GPA differences among various majors within a quality level. Table A-III.3 summarizes the results.

TABLE A-III.3

UNDERGRADUATE MAJOR, SCHOOL QUALITY, AND GPA
(Per cent Reporting a GPA of B- or Higher)

Undergraduate Major	Total	School Quality		
		I-II	III	IV
Pre-Medicine . .	81 (508)	79 (68)	80 (374)	88 (66)
Humanities . . .	68 (8,954)	71 (2,289)	65 (4,917)	71 (1,748)
Phy. Sci. . . .	67 (4,237)	73 (807)	63 (2,461)	67 (969)
Education . . .	64 (15,057)	74 (443)	63 (7,244)	65 (7,370)
Bio. Sci. . . .	61 (2,135)	71 (336)	56 (1,241)	63 (558)
Soc. Sci. . . .	57 (5,736)	60 (1,327)	55 (3,499)	58 (910)
Other Prof. . .	55 (4,770)	62 (495)	55 (2,573)	53 (1,702)
Engineering . .	49 (5,084)	57 (1,199)	54 (2,586)	49 (1,299)
Business . . .	44 (7,435)	50 (406)	43 (4,700)	46 (2,329)
Total .	60 (53,916)*	65 (7,370)	58 (29,595)	60 (16,951)

*Cf. footnote to Table A-III.2.

Clearly grade averages are stable across quality levels and vary by undergraduate major within quality level. At the extremes 81 per cent of the Pre-Medicine majors report a GPA of B- or better, in contrast with 44 per cent of the Business majors. Furthermore, the rank order of fields is essentially similar in each quality level.

What is not obvious is the implication of these findings. On the one hand, they suggest that different grade standards are being used in different curricula, but on the other hand, a case can be made that the differences reflect actual differences in achievement. The inference that Business students show lesser levels of academic achievement than Humanities students is certainly in line with academic folklore, although the fact that Education students surpass Biological Science, Social Sciences, and Engineering students is not exactly in accord with academic opinion on these matters.

Ideally we should like to have some measures known to be predictive of "true" achievement regardless of field of study. If the introduction of these measures eliminated the field differences in GPA, our confidence in the API would be doubly strengthened: 1) If the field differences disappeared when "true potential" is controlled, this would argue that there is little difference in faculty standards in different academic programs. 2) If the ordering of fields on "true potential" is correlated with their GPA order, we would have more confidence that the API index has a meaning across fields of study. No such pure measures are actually available (if they were we would have used them instead of API to begin with), but considerable light is shed on the matter when we simply consider National Merit Scholarship status and sex.

In the questionnaire, each student was asked to check whether he was a "National Merit Scholarship holder, Finalist, or Semi-Finalist" in high school. Since we are informed in a personal communication that some 90 per cent of our sample probably took the National Merit Scholarship examination, and since the group of Semi-Finalists, Finalists, and Scholarship holders fall above a fixed cutting point on that examination, we can assume that the students who checked this item represent a pool of uniformly high academic potential regardless of their undergraduate major. The drawback to this measure (other than an unknown degree of error in reporting) is that only three per cent of the total sample met the high cut-off point. While they undoubtedly constitute a group of very high talent, the remaining 97 per cent cover such a range in ability that the items cannot be used to "hold performance constant." The situation is somewhat akin to measuring social class by "having an income of a million dollars a year or not." However, if we assume that where the very, very bright students are, the very and fairly bright will tend to be also, we can use percentage of National Merit "winners" to rank-order various groups.

The second measure is sex, which is introduced because, as we have seen previously, girls tend to get better grades than boys, perhaps because they are more conventionally industrious or perhaps because they are more highly selected.

Table A-III.4 shows the effect of these independent variables on GPA (there is no appreciable sex difference in National Merit status).

TABLE A-III.4

PER CENT WITH A GPA OF B- OR HIGHER

Merit Winner	Sex	School Quality			Total
		I-II	III	IV	
Yes	Female	86 (234)	98 (278)	100 (79)	↓
	Male	81 (529)	88 (393)	99 (138)	
No	Female	71 (2,515)	65 (12,335)	70 (6,641)	
	Male	59 (4,092)	51 (16,589)	53 (10,093)	
					3.1* (53,916)

*Cf. footnote to Table A-III.2

The differences are those we expected: Women are more likely than men to get high GPA's, although less so among the Merit Winners who are all very bright; Merit Winners get strikingly higher grades than the riffraff in the bottom 97 per cent in ability. Interestingly too, the Merit Winners get better grades in lower quality schools, while non-Merit Winners do not. Presumably the merit winners do better in less selective schools because their rank standing is much higher (a Merit Winner in level IV is in the top one per cent of his class, while in levels I and II he is only in the top 10 per cent). That non-Merit Winners show no consistent differences by school quality is consistent with our assumption that pulling out the top three per cent leaves the remaining IQ's very heterogeneous.

Now, let us examine the talent differentials by field of study, within a sex grouping and quality.

Table A-III.5 contains a considerable amount of substantive information about the interrelations of school quality, undergraduate major, and the distribution of talent. We note some confirmations of folklore in the fact that, over all, Natural Sciences have the greatest proportion of Merit Winners, followed by Humanities and Social Sciences, while Business and Education are the bottom ranking fields. However, we note also that the school differences[3] are considerable, e.g., female Business majors in levels I and II rank higher than every level IV field except Physical Sciences.

Table A-III.6 gives the per cent of students in each of these groups reporting a GPA of B- or higher (N's are identical with Table A-III.5).

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[3] Because school quality was defined in terms of mean scores on the National Merit test for samples of freshmen, the existence of a school quality correlation is guaranteed. It is the degree of relationship and trends in sub-fields which can be considered "findings."

TABLE A-III.5

UNDERGRADUATE MAJOR, SEX, SCHOOL QUALITY AND MERIT WINNERS

a) Per cent Merit Winners

Sex	School Quality	Undergraduate Major									Total
		Pre-Med.	Hum.	Phy. Sci.	Edu.	Bio. Sci.	Soc. Sci.	Other Prof.	Eng.	Bus.	
Male	I-II	16.2 (68)	11.2 (982)	22.2 (603)	2.9 (104)	11.0 (204)	10.4 (862)	2.8 (233)	8.4 (1,190)	3.4 (375)	11.4 (4,621)
	III	2.5 (354)	4.6 (2,187)	5.2 (1,824)	0.6 (1,773)	0.6 (676)	3.1 (2,181)	1.7 (1,155)	1.8 (2,567)	1.0 (4,265)	2.3 (16,982)
	IV	1.8 (56)	2.3 (1,024)	4.1 (876)	0.5 (2,873)	2.8 (427)	3.3 (662)	0.0 (869)	1.3 (1,296)	0.5 (2,128)	1.3 (10,231)
Female	I-II	- (0)	11.1 (1,307)	17.6 (204)	2.4 (339)	6.8 (132)	7.1 (465)	7.6 (262)	- (9)	- (31)	8.5 (2,749)
	III	- (20)	3.4 (2,730)	9.4 (637)	1.0 (5,471)	4.1 (565)	1.9 (1,318)	1.2 (1,418)	- (19)	1.1 (435)	2.2 (12,613)
	IV	- (10)	3.5 (724)	5.3 (93)	0.8 (4,497)	0.0 (131)	1.6 (248)	1.0 (813)	- (3)	0.0 (201)	1.2 (6,720)
Total		4.3 (508)	5.6 (8,954)	8.8 (4,237)	0.9 (15,057)	3.6 (2,135)	4.5 (5,736)	1.2 (4,770)	3.2 (5,084)	1.0 (7,435)	3.1 (53,916)*

b) Rank in Per cent of Merit Winners

Male	I-II	2.0	3.0	1.0	8.0	4.0	5.0	9.0	6.0	7.0
	III	4.0	2.0	1.0	8.5	8.5	3.0	6.0	5.0	7.0
	IV	5.0	4.0	1.0	7.5	3.0	2.0	9.0	6.0	7.5
Female	I-II	-	2.0	1.0	6.0	5.0	4.0	3.0	-	-
	III	-	3.0	1.0	7.0	2.0	4.0	5.0	-	6.0
	IV	-	2.0	1.0	5.0	6.5	3.0	4.0	-	6.5
Total Sample .		4.0	2.0	1.0	9.0	5.0	3.0	7.0	6.0	8.0

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*Cf. footnote in Table A-III.2.

TABLE A-III.6

UNDERGRADUATE MAJOR, SEX, SCHOOL QUALITY AND GPA

a) Per cent with GPA of B- or Higher

Sex	School Quality	Undergraduate Major								
		Pre-Med.	Hum.	Phy. Sci.	Edu.	Bio. Sci.	Soc. Sci.	Other Prof.	Eng.	Bus.
	I-II	79	68	72	67	70	56	51	58	49
Male	III	82	62	59	51	51	52	47	54	42
	IV	86	67	66	54	60	55	49	49	45
	I-II	-	72	77	77	72	68	72	-	-
Female	III	-	68	73	67	64	59	62	-	56
	IV	-	77	75	72	73	66	58	-	58

b) Rank in GPA

	I-II	1.0	4.0	2.0	5.0	3.0	7.0	8.0	6.0	9.0
Male	III	1.0	2.0	3.0	6.5	6.5	5.0	8.0	4.0	9.0
	IV	1.0	2.0	3.0	6.0	4.0	5.0	7.5	7.5	9.0
	I-II	-	3.0	1.0	2.0	4.0	6.0	5.0	-	-
Female	III	-	2.0	1.0	3.0	4.0	6.0	5.0	-	7.0
	IV	-	1.0	2.0	4.0	3.0	5.0	6.0	-	7.0

Now, if (within a school quality level) differences in the GPA's of students in various undergraduate fields stem only from differences in sex composition and in recruitment of talented high school seniors, then within a sex and quality grouping, ranks in GPA and in Merit Winners should be similar. Tables A-III.5 and A-III.6 show that there is considerable agreement:

TABLE A-III.7

RANK IN MERIT WINNERS (TABLE A-III.5) MINUS RANK IN GPA (TABLE A-III.6)

Sex	School Quality	Undergraduate Major								
		Pre-Med.	Hum.	Phy. Sci.	Edu.	Bio. Sci.	Soc. Sci.	Other Prof.	Eng.	Bus.
Male	I-II	+1.0	-1.0	-1.0	+3.0	+1.0	-2.0	+1.0	0.0	-2.0
	III	+3.0	0.0	-2.0	+2.0	+2.0	-2.0	-2.0	+1.0	-2.0
	IV	+4.0	+2.0	-2.0	+1.5	-1.0	-3.0	+1.5	-1.5	-1.5
Female	I-II	-	-1.0	0.0	+4.0	+1.0	-2.0	-2.0	-	-
	III	-	+1.0	0.0	+4.0	-2.0	-2.0	0.0	-	-1.0
	IV	-	-1.0	-1.0	+1.0	+3.5	-2.0	-2.0	-	-0.5

TABLE A-III.8

RANK IN MERIT WINNERS BY RANK IN GPA

Rank in Merit Winners	Rank in GPA		Total
	1-4	5 or less	
1-4	17	7	24
5 or less	7	16	23
Total .	24	23	47
		Q = 0.70	

The relationship is not perfect by any means, but there is only one discrepancy of four ranks, and only four of three ranks, the remaining 40 cases all receiving relative GPA's within 0,1, or 2 steps of the prediction. What is perhaps even more important is that only two fields have consistent signs to their discrepancies... that is, receive better (or worse) grades in each comparison than would be predicted. Clearly students in Education are more likely to report a GPA of B- or better than one would predict on the basis of their Merit Winners, regardless of sex or school quality. Perhaps there is some inflation in grading standards applied to Education students, or perhaps they consistently do better in their course work than their "talent" would suggest. At the opposite extreme, Social Science students are consistently lower in rank than their merit proportion predicts. Either tougher standards are being applied to Social Science majors or they are "under-achieving" in terms of their IQ. The fact that male Pre-Medical students (there are too few women Pre-Medical majors to justify tabulations) have all positive deviations probably reflects the fact that, regardless of native ability, undergraduates with less than B- cumulative grade point averages are probably likely to abandon "Pre-Med" as a major field before the senior year.

Because the relationships are far from perfect, and the measures crude, these findings should not be considered definitive by any means. However, it is our feeling that the following generalizations find some support:

1) Grades in Education are somewhat "inflated," although our correction for School Quality serves indirectly to mitigate this.
2) Social Science majors' grades appear somewhat "deflated."
3) Although the remaining fields vary considerably in GPA levels, when sex is controlled, the rank correlation between GPA level and per cent Merit Winners suggests that these differences may well stem from actual differences in academic potential, and thus presumably in actual performance.

Appendix IV

LISTING OF SAMPLE COLLEGES AND UNIVERSITIES

SAMPLE OF COLLEGES AND UNIVERSITIES FOR SURVEY OF 1961 GRADUATING CLASS

(Alphabetical Listing)

College or University	Number Eligible Students Sampled	Per cent Responding
Alabama, University of--University	471	62
Albion College--Albion, Michigan	171	100
Arkansas State College--Jonesboro	197	72
Arkansas, University of--Fayetteville.	365	64
Atlantic Union College--South Lancaster, Massachusetts	50	98
Auburn University--Auburn, Alabama	178	82
Beloit College--Beloit, Wisconsin	147	98
Blackburn College--Carlinville, Illinois	41	100
Boston College--Chestnut Hill, Massachusetts	533	91
Boston University--Massachusetts	396	73
Briar Cliff College--Sioux City, Iowa.	25	100
Bridgewater College--Bridgewater, Virginia	74	93
Brooklyn College--New York	593	90
Brooklyn, Polytechnic Institute of--New York	209	72
Brown University (and Pembroke College) Providence, Rhode Island	584	77
California, University of--Berkeley	595	87
California, University of -- Los Angeles	487	82
Carnegie Institute of Technology--Pittsburgh, Pennsylvania	230	97
Case Institute of Technology--Cleveland, Ohio	260	84
Chico State College--Chico, California	264	91
Cincinnati, University of--Ohio	762	89
Clark University--Worchester, Massachusetts	105	99
Cleary College--Ypsilanti, Michigan	19	79
Clemson Agricultural College--Clemson, South Carolina	329	99
Colorado State University--Fort Collins	427	88
Colorado, University of--Boulder	501	82
Columbia University--New York City	382	79
Concordia Teachers College--Seward, Nebraska	114	99
Cornell University--Ithaca, New York	447	84

COLLEGES AND UNIVERSITIES--Continued

College or University	Number Eligible Students Sampled	Per cent Responding
Dartmouth College--Hanover, New Hampshire	236	91
Delaware, University of--Newark	350	45
De Paul University--Chicago, Illinois	324	99
Detroit, University of--Michigan	177	84
Drexel Institute of Technology--Philadelphia, Pennsylvania	356	72
Eastern Michigan University--Ypsilanti, Michigan	461	86
Eastern Oregon College--La Grande	63	81
Eastern Washington College of Education--Cheney	157	79
Evansville College--Evansville, Indiana	160	99
Florence State College--Florence, Alabama	116	100
Fordham University--New York City	374	73
Fort Valley State College--Fort Valley, Georgia	98	83
Fresno State College--Fresno, California	425	68
Greenville College--Greenville, Illinois	101	100
Hamline University--St. Paul, Minnesota	146	98
Harvard University--Radcliff College--Cambridge, Massachusetts	491	75
Haverford College--Haverford, Pennsylvania	110	57
Hawaii, University of--Honolulu	624	96
Hebrew Teachers College--Brookline, Massachusetts	23	100
Henderson State Teachers College--Arkadelphia, Arkansas	113	90
Holy Cross, College of the--Worchester, Massachusetts	333	96
Hood College--Frederick, Maryland	98	100
Hunter College--New York City	647	61
Huron College--Huron, South Dakota	38	97
Illinois Institute of Technology--Chicago	155	93
Illinois, University of--Urbana	480	76
Indiana University--Bloomington	447	77
Iowa State University of Science and Technology--Ames	437	94
Kansas, University of--Lawrence	619	94
Kentucky, University of--Lexington	427	87
Lake Erie College--Painesville, Ohio	80	86
Lake Forest College--Lake Forest, Illinois	104	94

COLLEGES AND UNIVERSITIES--Continued

College or University	Number Eligible Students Sampled	Per cent Responding
Langston University--Langston, Oklahoma	63	86
Le Moyne College--Syracuse, New York	204	100
Long Beach State College--California	179	83
Long Island University--Brooklyn, New York	434	69
Los Angeles State College--California	309	80
Lycoming College--Williamsport, Pennsylvania	107	79
Manhattanville College of the Sacred Heart--Purchase, New York	143	100
Marquette University--Milwaukee, Wisconsin	386	96
Maryland, University of--College Park	594	68
Mary Washington College--Fredericksburg, Virginia	224	93
Massachusetts Institute of Technology, Cambridge, Massachusetts	206	88
McKendree College--Lebanon, Illinois	47	77
Memphis State University--Memphis, Tennessee	256	91
Merrimac College--North Andover, Massachusetts	148	92
Miami, University of--Coral Gables, Florida	419	94
Michigan State University--East Lansing, Michigan	453	94
Michigan, University of--Ann Arbor	588	93
Mills College of Education--New York City	29	100
Minnesota, University of--Minneapolis	409	88
Minnesota, University of--Duluth Campus	78	78
Mississippi Southern College--Hattiesburg	180	96
Mississippi State University--State College, Mississippi	481	86
Montclair State College--Upper Montclair, New Jersey	383	54
New York, City College of	519	95
New York, State University of:		
College of Education at Buffalo	418	93
College of Education at Fredonia	146	92
New York University--New York City	385	74
North Carolina, University of--Chapel Hill	407	94
Northland College--Ashland, Wisconsin	53	81

COLLEGES AND UNIVERSITIES--Continued

College or University	Number Eligible Students Sampled	Per cent Responding
Northwestern University--Evanston, Illinois	393	54
Notre Dame of Maryland, College of--Baltimore	87	100
Notre Dame University--Notre Dame, Indiana	790	85
Oberlin College--Oberlin, Ohio	288	99
Ohio State University--Columbus	504	82
Ohio Wesleyan University--Delaware	350	81
Oklahoma Baptist University--Shawnee	172	73
Oklahoma, University of--Norman	420	86
Oregon State University--Corvallis	614	88
Oregon, University of--Eugene	534	84
Pasadena College--Pasadena, California	104	99
Pembroke State College--Pembroke, North Carolina	63	100
Pennsylvania State University--University Park	624	92
Pennsylvania, University of--Philadelphia	417	70
Pittsburgh, University of--Pennsylvania	233	71
Princeton University--Princeton, New Jersey	245	86
Rensselaer Polytechnic Institute--Troy, New York	238	81
Rochester Institute of Technology--Rochester, New York	238	75
St. Benedict, College of--St. Joseph, Minnesota	50	100
St. Bonaventure University--St. Bonaventure, New York	194	98
St. Scholastica, College of--Duluth, Minnesota	65	91
Sam Huston State Teachers College--Huntsville, Texas	221	94
San Jose State College--San Jose, California	422	93
South Dakota, State University of--Vermillion	247	92
Southeastern State College--Durant, Oklahoma	117	97
Southern California, University of--Los Angeles	297	73
Southern Illinois University--Carbondale	391	83
Southern Methodist University--Dallas, Texas	329	54

COLLEGES AND UNIVERSITIES--Continued

College or University	Number Eligible Students Sampled	Per cent Responding
Southern University--Baton Rouge, Louisiana	180	92
Stanford University--Stanford, California	413	88
Susquehanna University--Selinsgrove, Pennsylvania	85	100
Sweet Briar College--Sweet Briar, Virginia	87	100
Syracuse University--Syracuse, New York	294	31
Texas, University of--Austin	412	80
Tulane University--New Orleans, Louisiana	171	69
Ursinus College--Collegeville, Pennsylvania	178	100
Wagner College--Staten Island, New York	255	100
Washington University--St. Louis, Missouri	543	69
Washington, University of--Seattle	481	89
Wayne State University--Detroit, Michigan	470	89
Western Kentucky State College--Bowling Green	237	86
Western State College of Colorado--Gunnison	109	100
Williams College--Williamstown, Massachusetts	269	99
Wisconsin, University of--Madison	320	88
Wyoming, University of--Laramie	450	77
Xavier University--Cincinnati, Ohio	270	96

SUMMARY OF SCHOOL RESPONSE RATES

Per cent Return	N	Per cent of Schools	Cumulative Per cent of Schools
96 - 100	37	27.2	27.2
91 - 95	24	17.6	44.8
86 - 90	21	15.4	60.2
81 - 85	16	11.8	72.0
76 - 80	12	8.8	80.0
71 - 75	11	8.1	88.9
66 - 70	6	4.4	93.3
61 - 65	3	2.2	95.5
60 or less . . .	6	4.4	99.9
	136*	99.9%	

*Totals 136 rather than 135 because of separate field operations at University of Minnesota, Duluth and University of Minnesota, Minneapolis.

SCHOOLS WITH LESS THAN 60 PER CENT RESPONSE

School	Per cent
Haverford College	57
Northwestern University	54
Montclair State College	54
Southern Methodist University	54
University of Delaware	45
Syracuse University	31

APPENDIX V

THE SAMPLE DESIGN

Delimitation of the Universe

The universe for the survey was defined to include:

> All students completing the requirements for their baccalaureate degrees during the Spring term (semester, quarter, or trimester) of 1961 and upon whom such degrees were conferred at the end of that term by an eligible institution of higher learning.

A number of the concepts employed in the foregoing are in need of explanation:

Baccalaureate recipients were here defined as including all those receiving a first-level earned degree of a type normally based on at least four years of degree-credit work beyond the high school level with the exception of those receiving a first-level degree from a professional school requiring at least two years of undergraduate work prior to admission. The decision to exclude the specified set of first-professional degree recipients derived from the focus of the survey on graduate educational plans. It was felt that, in practice, the degrees granted by professional schools of the type here excluded were generally terminal. The largest groups excluded under this provision are recipients of M.D., D.D.S., L.L.B., and B.D. degrees. Groups like these did not appear to fit into the study design very well. The excluded first-level degree recipients amounted to about eight or nine per cent of the total first-level degree recipients during the 1960-1961 academic year. While the rule under which they were excluded was admittedly arbitrary, it most certainly served to delimit a universe for the study which was more nearly congruent with the study objectives that one in which all recipients of first-professional degrees would be included.[1]

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[1] See W. C. Eells and H. A. Haswell, *Academic Degrees*, OE-54008, Bulletin 1960, No. 28, G.P.O., Washington, 1960, and W. E. Tolliver, *Earned Degrees Conferred 1959-1960*, OE-54013-60, Circular No. 687, G.P.O., Washington, 1962, for an elaboration of these problems. Beginning with the 1960-1961 earned degree statistics, the Office of Education will be making a distinction between baccalaureate and first-professional degrees only slightly different from the one made in the present survey. Statistics for baccalaureate and first-professional degrees involving four years of *academic* credit will for the first time be separated from the statistics for professional degrees requiring five or more years of *academic* credit. Thus, the only discrepancy between the NORC and the Office of Education classifications will be in the handling of participants in the relatively rare five-year programs leading to bachelor degrees in Engineering and the five-year bachelor degree programs in fields like Architecture and Forestry. The relatively small number of recipients of degrees under such programs were considered as eligible for the NORC survey but will be combined with recipients of first professional degrees in fields like Law, Medicine, Dentistry, and Divinity in the Office of Education Series.

The restriction of the universe to Spring convocation degree recipients was due to two rather different considerations. First of all, many of the students who received their degrees in August of 1960 or during the Winter of 1960-1961 might be expected to have embarked already, by the time of the survey in April, 1961, along a line of postgraduate activity. Some were already serving in the military establishment, some where in graduate school, some were working at regular jobs, and others were full-time housewives. A questionnaire dealing with plans for the first year out of college did not seem appropriate for mid-year graduates and yet their special problems did not seem to be of sufficient interest to warrant the design and administration of a special retrospective questionnaire. Second, it was anticipated that it would be quite difficult to locate these individuals and to elicit their cooperation.

This combination of circumstances made it appear prudent to exclude mid-year (including Summer session) graduates from the scope of the inquiry. The problem then became one of defining a mid-year graduate. A number of institutions hold only one convocation a year while others have only Summer session and Spring convocations. But there are students at such institutions who complete their degree requirements at the end of the Autumn semester and are then free to enter into their postgraduate activities in February. Even though they do not receive their degrees until June, their status is essentially identical to that of students from multiple-convocation institutions who are graduated mid-year. It was thus decided to include in the survey only students who were still in the process of completing their baccalaureate degree requirements during the Spring term. This included all students who were formally registered as well as some students who were not registered but were working on undergraduate honor theses, engaged in required practice teaching, or fulfilling some other type of internship requirement. On the basis of a special survey of college registrars, we estimate that approximately 75 per cent of all those receiving baccalaureate degrees during the period from July, 1960 through June, 1961 did not complete the requirements for their degrees until the Spring term of 1961 and were thus included within the scope of the present research. Our more detailed estimates appear in the following table:

TABLE A-IV.1

PERCENTAGE DISTRIBUTION OF STUDENTS RECEIVING BACCALAUREATE DEGREES FROM JULY, 1960 THROUGH JUNE, 1961 BY PERIOD DURING WHICH DEGREE REQUIREMENTS WERE COMPLETED*

Summer, 1960**	12%	
"Regular students"		10
Summer session only		2
Autumn-Winter, 1960-61**	13	
Spring, 1961	75	
	100%	

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[*] Based on March, 1961 survey of registrars at the 135 institutions in the NORC sample. The estimates are so weighted as to provide an unbiased estimate for 1960-1961 graduates of all U.S. institutions of higher learning.

[**] About one-sixth to one-fifth of those completing their requirements mid-year (i.e., about four or five per cent of all graduates) were in attendance at schools with a single convocation and therefore did not actually receive degrees until the end of the Spring term.

The distributions of a number of characteristics among the students completing their requirements mid-year unquestionably differ appreciably from the comparable distributions among those finishing in the Spring. We know, for instance, that the mid-year students were disproportionately in attendance at Southern and public institutions, while the Spring students were disproportionately from Northeastern and private institutions. There are quite probably many concomitant differences between the two groups of students arising out of the variation among institutions in terms of regulations and customs with regard to the phasing of the various academic junctures as well as more idiosyncratic factors which cause a student to deviate from the time pattern conventional at his own institution. Thus, in generalizing from the current sample, we suggest the rather conservative approach of limiting projections to those 1960-1961 graduates who completed their baccalaureate requirements during the Spring term of 1961.[2]

An "eligible institution" for purposes of this study was one which was listed in Part 3 (Higher Education) of the 1957-1958 Office of Education Education Directory as being accredited by one of the six regional accrediting associations (including institutions with only provisional accreditation). Also included were those baccalaureate-degree-granting institutions which were not accredited by a regional accrediting association but which were listed in the Directory as having an enrollment of five hundred or more students.[3]

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[2] Some notion of the possible danger involved in projections from the present survey to the total 1960-1961 graduating class can be gained from the following rather extreme hypothetical example.

> Assume that 30 per cent of the Spring students but only 10 per cent of the mid-year students planned to enroll for graduate courses during 1961-1962. Then, a projection to the entire 1960-1961 class from the survey of Spring students would show 106,000 students planning to enroll while a survey of the entire class would have resulted in a projection of 88,000. Thus, the projection derived from the Spring students alone would be about 20 per cent too high.

This example may be highly unrealistic. Twenty percentage points may be a substantially larger difference than one would ever find between the mid-year and Spring students with respect to any variable of consequence. Unfortunately, we are aware of no data which would enable us to estimate the magnitude of parametric differences between the two populations. Thus, caution in the scope of projections is advisable, particularly where relatively small proportions of the total population are characterized by the property in question.

[3] The enrollment figures were for the Fall of 1956. They presumably included all students enrolled for courses beyond the high school level but exclude students who were enrolled only for correspondence courses.

The use of the foregoing sampling frame resulted in the exclusion from the survey universe of certain types of students who might properly have been included.

1. Students who received at the end of the Spring term of 1961 a baccalaureate degree from an institution which had not had a baccalaureate-degree program in 1956-1957.

2. Students who received at the end of the Spring term of 1961 a baccalaureate degree from an institution which was listed in the 1957-1958 Directory as not being accredited by one of the regional accrediting associations and which were listed in that Directory has having a total enrollment of less than five hundred students.

3. Students who received at the end of the Spring term of 1961 a baccalaureate degree from an institution which had a baccalaureate-degree program in 1956-1957 but which did not meet the criteria for inclusion in the Directory.[4]

Since the statistics pertaining to earned degrees conferred during 1960-1961 will not be available until the Summer of 1963, it is impossible at present to make a precise estimate of the number of legitimate baccalaureate degree recipients excluded from the survey universe. Our best guess is that the exclusions amount to somewhere between five and ten per cent of the hypothetically complete universe. A more precise estimate will be made at such time as the requisite conferment data become available.

The Sample

A two-stage sampling scheme was followed in the selection of students. The first stage involved the selection of 135 of the

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[4] See page one of the previously cited Directory for the criteria. Given the leniency of the standards for inclusion in the Directory, this source of loss was probably totally inconsequential. Excluded institutions would appear to have been primarily "diploma mills," the degrees from which were recognized as legitimate by practically no legitimated institutions connected with higher education.

1,039 institutions defined as eligible for the purposes of this study.[5]

Clustering by school was adopted in preference to a single-stage sample wherein students would be subsampled from each of the 1,039 schools. One reason for this decision was the necessity of employing field representatives at each of the schools from which students were being taken in order to insure the accuracy of the subsampling process within the school and to maximize the rate of questionnaire completion. The costs of employing field representatives at all 1,039 schools would have been prohibitive. The second reason for clustering was the intention to analyze certain of the data on a school-by-school basis. For this purpose, it was deemed desirable to select a relatively large number of cases from each of the schools falling into the sample. Of course the fewer schools in the sample the larger the "take" from each school (given a fixed total sample size) but the larger the sampling variance of estimates pertaining to the entire universe. Balancing the two pressures toward a smaller number of primary sampling units against the pressure toward the minimization of the variance of over-all estimates, a first-stage sample of 135 was felt to be more or less optimal.

Each institution was first allocated into one of four strata on the basis of an index reflecting the postgraduate educational activities of its recent graduates. Values with respect to each of eight variables were determined for each of the 1,039 schools. The value with respect to a given variable for a given school was the number of individuals who had received a baccalaureate degree from that school and who:

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[5] A number of arbitrary decisions was involved in the formation of primary sampling units. It is difficult to determine the limits of a particular institution in situations where several rather distinct colleges are affiliated in such a way that they can be viewed as either components of a larger university or separate schools. Since the expected values of estimates to the universe of graduates are not affected by the manner in which primary samplings are formed, expediency in terms of the field operation was allowed to govern the process. A few examples follow:

1. Harvard and Radcliffe were treated as one.
2. Brown and Pembroke were treated as one.
3. Columbia and Barnard were treated as one.
4. Tulane and Newcomb were treated as one.

1) were awarded a Ph.D. during 1957, 1958, or 1959 in Mathematics, Physics, Astronomy, Chemistry, or an Earth Science.
2) were awarded a Ph.D. during 1957, 1958, or 1959 in Botany, Phytopathology, Biochemistry, Genetics, Microbiology, Physiology, or a related field, Zoology, in some other Biological Science, or in a Medical Science.
3) were awarded a Ph.D. during 1957, 1958, or 1959 in Engineering.
4) were awarded a Ph.D. during 1957, 1958, or 1959 in Sociology, Anthropology, Archeology, Economics, Geography, or Psychology.
5) were awarded a Ph.D. during 1957, 1958, or 1959 in History, a Foreign Language, English, or Philosophy.
6) were awarded a Ph.D. or Ed.D. in Education during 1957, 1958, or 1959.
7) enrolled as a freshman in an American medical school during one of four selected academic years between 1949 and 1955.
8) enrolled as a freshman in an American dental school at some time between 1951 and 1957.

The schools were ranked with respect to each of these eight variables independently. The four strata were then defined as follows:

I. One of the 25 top schools with respect to one or more of the eight variables.
II. Not in Stratum I, but with a rank between 26 and 100 with respect to one or more of the eight variables.

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5. Brooklyn Center, Brooklyn College of Pharmacy, and C.W. Post College were treated as one.

6. The Minneapolis and Duluth Campuses of the University of Minnesota were treated as one.

7. The various branches of the University of California were each treated separately.

8. The various branches of the College of the City of New York were each treated separately.

III. Not in Strata I or II, but had a value of two or more per year with respect to one or more of the eight variables.

IV. Not in Strata I, II, or III.

Within each of the above strata, the institutions were allocated into two groups on the basis of whether they were under public or under private control. Within each of the resulting eight strata, the institutions were ordered with respect to a measure of size and institutions were generally sampled systematically with probability proportionate to the measure of size. In the case of several strata, it was necessary to sample with equal probability a substratum composed of the smallest schools, in order to avoid intricate weighting at the tabulation stage of the survey.

The measure of size was usually the number of 1958-1959 bachelor degrees awarded by that school as reported in the 1960 edition of the American Council on Education's American Universities and Colleges.[6] Frequently, separate figures appeared for bachelor degrees and for first professional degrees. For institutions where all professional degrees granted were clearly of the type which were being treated as baccalaureate degrees in the present survey,[7] the measure of size was the sum of the bachelor and first professional figures. For each of the 111 institutions thought to grant some first professional degrees which were to be excluded from the survey, a letter was sent to the registrar requesting the total count of bachelor degrees and first professional degrees of the type to be included in the survey granted by his institution during the 1958-1959 academic year. The figure supplied by the registrar was then used as the measure of size.

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[6] In the relatively rare instances when no data were available in the ACE volume with respect to the number of degrees conferred by a given school, the data appearing in the Office of Education's Earned Degrees volume for 1957-1958 were employed.

[7] In other words, the institution had no medical, dental, law, divinity, or other professional school which granted first professional degrees of the type being excluded from the present survey.

The following table shows how the universe and the sample were distributed with respect to the eight strata.

TABLE A-IV.2

DISTRIBUTION OF THE UNIVERSE AND THE SAMPLE
WITH RESPECT TO THE EIGHT STRATA

Index of Postgraduate Activities	Public Control			Private Control		
	Universe		Sample	Universe		Sample
	Number of Schools	Total Measure of Size	Number of Schools	Number of Schools	Total Measure of Size	Number of Schools
I	35	69,414	22	31	32,613	22
II	66	56,334	20	92	38,085	20
III	113	44,684	10	204	40,614	11
IV	138	26,571	10	360	36,592	20
Total	352	197,003	62	687	147,904	73

The number or schools selected from a given stratum was arbitrary. The numbers were arrived at by trying to balance the needs of the anticipated school-by-school analysis against the need to avoid a complex system of weights.

A field representative was assigned to each of the 135 schools. His first task was to collect the previously cited data pertaining to the number of degrees of various types conferred at each convocation during the academic year. This information was necessary for the establishment of the over-all sampling rate for the survey. The next task of the field representative was to assemble a list of all seniors who were completing their baccalaureate requirements during the Spring term and who, it was anticipated, were going to be graduated at the end of that term. Officials at every one of the 135 selected institutions cooperated with the field representative in assembling the list of eligible seniors and granted general approval of the survey.

Prospective baccalaureate degree recipients from institutions in Strata I and II were sampled at a rate of .288 while those from institutions in Strata III and IV were sampled at a rate of .096. The differential sampling rates were adopted because among the chief objectives of the survey was the estimation of parameters pertaining to graduating seniors who were planning to go on for graduate study in particular academic fields. Even though the stratification was based on the absolute numbers of eventual Ph.D.'s produced by a school rather than its per capita productivity, there was reason to believe that the rate of graduate study would be appreciably higher among Strata I and II baccalaureates than among those from Strata III and IV. While the employment of differential sampling rates undoubtedly increased the sampling variance of most estimates pertaining to the total cohort of graduating seniors, it was felt that this disadvantage would be more than compensated by the gains in the precision of estimates pertaining to certain relatively rare graduate fields.

For any given school, the subsampling rate for students was the ratio of the over-all sampling rate for the school's stratum to the school's probability of being selected. This procedure automatically compensated for any disproportionality between the measure of size which had been assigned to the school at the primary stage of selection and the actual number of students found to be eligible for inclusion in the survey. The assigned measures of size were, of course, quite imperfectly related to the actual sizes owing to differences among the schools in the magnitude of the changes which had taken place from 1958-1959 to 1960-1961 in the sizes of their graduating classes. In addition, schools varied markedly in the proportion of graduates completing the requirements for the baccalaureate degree during a term other than the Spring one. Nevertheless, the disproportionality resulting from these factors introduced no appreciable bias in the estimates derived from the sample. The primary consequence was a considerable variation among schools in the number of students selected for the sample and quite probably a slight increase in the sampling variance of the survey statistics, even though they are all of the ratio type.

At sixty of the schools, all eligible seniors were to be taken into the sample because the probability of the school was either less than or equal to the student sampling rate which had been set for the school's stratum. At the remaining seventy-five schools, a sample of eligible seniors was drawn at a rate computed in the manner indicated in the preceding paragraph. The actual sampling procedures employed varied from school to school. A copy of the field representatives' sampling instructions appears at the end of this appendix.

As was anticipated, lists of eligible seniors assembled during March and April turned out to contain a number of false positives, individuals who failed to meet at least one of our criteria of eligibility. The most frequent types of false positives were cases where the student himself did not (in April, May, or June) think that he would be graduated at the end of the current term.[8] Of the 36,013 completed questionnaires returned prior to the survey deadline, 2,231 were from individuals who appeared to be ineligible for the survey. These questionnaires were omitted from all tabulations.

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[8] See Question 43 of the questionnaire. A later questionnaire (Spring, 1962) was pre-tested on a sample of the 1961 respondents who had not expected to be graduated in the Spring of 1961. While the expectations of the vast majority had in fact been correct, some of the respondents were graduated in Spring, 1961, in spite of their pessimism in response to Question 43.

In making estimates from the sample, two types of weighting are necessary. The returns from schools the probabilities of which were less than the sampling rates for their strata had to be so weighted as to bring the probability of a student in such a school up to the stratum level. This most frequently occurred with respect to III and IV strata schools. Many of the schools in those strata had been sampled at a rate of .0555 and it was thus necessary to weight their returns by a factor of 1.723 to bring the probability for their students up to the over-all stratum sampling rate (.096).

In addition to the above initial weighting, the returns from all III and IV schools were weighted by a factor of three to compensate for the differential sampling rates between strata. Thus, the range of weights among schools was from 1 to 5.169 and averaged 1.677.

Since the eligibility status of many of the students who were sent questionnaires but did not return them is not known, it is impossible to make a precise estimate of the survey completion rate. Assuming that the proportion of non-respondents with unknown eligibility status who were in fact ineligible was the same as the proportion of ineligibles among those who did respond, the weighted completion rate for the survey was 85 per cent. Since the non-respondents from the 1961 survey are being followed up with fair success in NORC's periodic surveys of the Spring, 1961 cohort, it may soon be possible to form at least a fair impression of the direction and magnitude of the non-response bias in the original survey.

Study # 431
College or University ______________________________ April, 1961

Sampling Instructions

A. Preparing the list of seniors.

In order to select the sample of students to whom you will distribute questionnaires, you will need a list or a file containing the name of every eligible senior at your school. An eligible senior is a student who is registered as an undergraduate during the Spring term of 1961 and who is expected to receive his or her baccalaureate degree (A.B., B.A., B.S., B.Ed., B.Arch., B.Eng., etc.) at the end of the current term. This means that you should exclude, insofar as possible, students who had completed all work for their degrees prior to the current term but who will not have been formally graduated until the June convocation. The word "registered" in the first sentence of this paragraph is to be interpreted broadly as meaning "still fulfilling requirements for a baccalaureate degree." In other words, you should classify a student as "registered" even if he is no longer taking courses but is fulfilling an honors thesis or some sort of outside employment or internship requirement.

Students under five-year baccalaureate programs in fields like engineering and architecture who are going to receive their degrees at the end of this term are to be classified as eligible seniors. Students being graduated from a professional school which requires two or more years of undergraduate work prior to admission are here viewed as receiving graduate degrees rather than baccalaureate degrees and are therefore to be excluded from the study. This means that students receiving Bachelor of Law degrees are invariably to be excluded while students receiving first professional degrees in fields like Divinity and Social Work are to be excluded if the professional school they are attending requires two or more years of undergraduate work prior to admission.

Should it turn out to be difficult to decide whether or not a certain category of students is to be included in the sample, immediately write Mrs. Boorstin describing your problem so that she can send you a ruling on the case.

Should it be difficult to distinguish students who are still registered from those who had completed all their work during a prior term, do the best you can, even if this involves distributing questionnaires to some ineligible graduating students. Err on the side of distributing too many questionnaires, if error cannot be avoided.

Always write us fully describing problems of this type but, if it is unlikely that we can be of any help in solving the problem, proceed without awaiting our reply. We do wish to have complete records of such difficulties, though.

We are aware that a definitive graduation list may not yet be available at your school, so all we ask is that you assemble as complete a list as is currently possible. If it should turn out that some of the anticipated graduates fail to fulfill their degree requirements during the present term, no great damage will be done. Again, you should err on the side of distributing questionnaires to some students who may not actually be graduated this June rather than omitting any students who will be graduated. Nevertheless, you should use as accurate a list as can now be obtained and not distribute questionnaires to students who cannot possibly complete their requirements during the current term.

Your first step in selecting the sample is to assemble or gain access to a complete register of eligible seniors. Since different schools keep their records in different ways, we cannot prescribe precisely what sort of register you should use or how you should distinguish an eligible senior from an ineligible one. You might find that your school will make available to you a typed list, a set of IBM cards, a set of file cards, or some other type of record which enables you to distinguish the eligible from the ineligible seniors. Any of these, or two of them used in conjunction, may turn out to be optimum for your school. You will have to make your choice on the basis of the particular situation you find.

The order in which names appear in the register is not of great consequence. The entire graduating class may be listed in alphabetical order, in alphabetical order by type of degree to be conferred, in alphabetical order within major field, etc. If you have a choice of orderings, you should use the one involving the highest degree of substantive classification. For instance, if you have the choice between a list where the names are in alphabetical order within a B.A.-B.S. dichotomy and a list where the names are in order of grade point average, you should use the grade point list, all other factors being equal. But, if the advantage of one list over another is not clearcut, simply use the more convenient one. In general, in selecting the register from which you will draw your sample, you should give considerable weight to the simplification of your over-all task. Consider such factors as the ease of obtaining or assembling the register, the ease of drawing names from the register, and the ease of obtaining addresses once the names have been selected. If sampling from a set of IBM cards or addressograph plates will enable you to have mailing labels produced by mechanical means, it would be well to sample from such a registry in preference to a substantively more detailed list, the use of which would complicate the distribution of the questionnaires to the sample respondents.

The precise method of sampling to be used will depend on the type of register or list you decide to use. Instructions pertaining to several different types of registers appear below. But, no matter what sampling method you employ, you will need a set of "sampling numbers." These numbers appear on the IBM tabulation sheets which you should find among the materials we have sent you. There are two columns of figures listed. The left-hand column is simply a count of the sampling numbers and will enable you to check whether you have selected the proper number of names. The right-hand column contains your sampling numbers, which designate the particular students to be included in your sample.

B. Sampling from a list.

We shall assume you have assembled a list containing the names of all eligible seniors and no ineligible ones. If the numbers in the right-hand column of your IBM listing were:

2
5
8
12
15
19
22
etc.,

you would simply count down your list of seniors and select for the sample the second name on the list, the fifth name, the eighth name, the twelfth name, and so on. Obviously, the principle by which the names are ordered on the list should have been established in complete independence of the particular set of sampling numbers sent to you so that the sample is truly random. In other words, chance alone must determine who shall be asked to fill out a questionnaire--subjective considerations should in no way enter into the selection of students. If the names are listed in an arbitrary order (alphabetically within field of concentration, by grade point average, by some serial number, or what have you), the use of the sampling numbers in the manner described above will insure the selection of a random sample.

If the list contains names of particular students known to be ineligible for this study, make sure you omit counting them as you proceed down the list. It might be wise to go through the entire list crossing out the names of known ineligibles before you begin drawing the sample.

C. Sampling from a file of cards.

The sampling procedure to be employed with a card file is essentially the same as the one to be employed with a list. If your sampling numbers were:

4
7
11
15
19
22
etc.,

you would count through the cards of eligible seniors and select the name on the fourth such card, the seventh, the eleventh, etc. Since a card file is quite likely to contain cards for many students who are not eligible for this study, you must be particularly careful not to count these ineligible cards as you draw your sample. Also, should some students have two or more cards in the file, make sure you count only one card for each eligible senior.

IMPORTANT

Most field representatives will find that they have been sent about fifty or a hundred more sampling numbers than they will need. For instance, there may be only nine hundred eligible seniors at your school; we may be asking you to select only about one-third of these, or three hundred, but we have sent you a list containing four hundred sampling numbers. At the end of your list, there would remain unused one hundred sampling numbers ranging from 900 to 1,200. You should simply ignore all the sampling numbers greater in value than the number of eligible seniors at your school.

In a few cases, we may have grossly underestimated the size of your graduating class and have thereby sent you fewer sampling numbers than you will need. For instance, there may be 1,500 eligible seniors but the highest sampling number on your list is 1,417. In such a case, phone Mrs. Boorstin and tell her how many eligible seniors there are. She will then see that you receive additional sampling numbers or revised instructions.

After your sample has been selected, enter the name and address of each sample student to the right of his or her sampling number on the IBM sheet. There are two sheets of carbon paper and two extra copies of the sampling number list already attached. Thus, you can produce three copies of your sample list at one time.

If you have pulled a set of IBM cards for your sample members, you can either have the list of sample names and addresses machine-printed on the 3-ply IBM paper we sent or else, if you prefer, you can have it printed on other 3-ply paper.

Please send us one of the copies of the sample as soon as it has been prepared. Retain the other two copies for your own record-keeping. When you return the copy of your sample list, please send us a detailed description of the sampling procedure you employed.

D. Sampling from a set of IBM cards.

This section is moderately technical. Don't bother to read it unless you are seriously considering using IBM equipment. If you are using IBM equipment, it is not necessary for you to understand the details of mechanical selection, as long as the IBM supervisor fully understands what is to be done.

If it is possible to pull out mechanically, from your school's general file of IBM cards, the cards for all the eligible seniors, there are several alternative sampling procedures available to you. Should it be difficult for you to arrange for IBM work and should a machine for addressing mailing labels from IBM cards not be available, then the simplest procedure would be to have the names and addresses of all eligible seniors listed on IBM paper. (If another list of equal accuracy were already available, you could use that and just ignore the IBM file.) The names could be listed in alphabetical order within academic majors, by grade point average, or in any other convenient order. Once you have the IBM list, you would select the sample manually as described above in the section on sampling from a list.

A second alternative would be to treat the set of IBM cards as a set of file cards and manually pull out the cards falling into the sample, as described in the section on sampling from a file. From the deck of cards you have selected for the sample, you could have a list of sample members printed and you might also be able to have address labels made up mechanically.

If you have ready access to IBM work and the graduating class is relatively large, it may be worthwhile to select the sample mechanically. There are innumerable ways in which this might be done but we shall describe the simplest, if not the most efficient, one.

For this procedure, you would need a set of IBM cards containing four blank columns (only three blank columns if there are fewer than one thousand eligible seniors at your school). If there are too few blank columns in your school's regular IBM card, the original set of cards can be reproduced, stripping columns which are irrelevant to the current task.

After you have assembled a set of cards with the proper number of blank columns, the cards should be arranged in order on the basis of some principle. (See the discussion of "order" in Section A.) This ordering of cards is done on an IBM sorter. Then, a consecutive number, running from 0001 (or 001) to the total number of eligible seniors at your school, should be punched in each card. In other words, the first card would be punched 0001, the second would be punched 0002, the third would be punched 0003, etc. This punching can be done with a reproducing punch machine from a deck of consecutive number cards or with a summary punch attachment to a tabulator wired to take progressive totals on a card count, or with a calculating punch.

The next step is to have a set of cards containing the sampling numbers key-punched. Each sampling number (the right-hand list on the IBM sheet we sent you) should be punched on a separate card. At this point, you would have two sets of cards: a set containing one card for each eligible senior and a set containing one card for each sampling number assigned to your school. These two sets should then be put into a collator wired to pull the card for each eligible senior whose consecutive number (the "order" number you had punched) corresponds to a sampling number. This is a four-pocket match. You will then have a set containing one card for each student falling into the sample. You can now use this set of sample cards for printing lists, printing mailing labels, or similar tasks.

If you wish to use an alternate mechanical procedure for selecting the sample, write Mrs. Boorstin describing the procedure you wish to employ and she will let you know by return mail whether your suggested procedure is permissible.

E. Special sample instructions for your school (if any): __________

____

____

____

APPENDIX VI

THE QUESTIONNAIRE

NATIONAL OPINION RESEARCH CENTER
UNIVERSITY OF CHICAGO
5720 WOODLAWN AVENUE · CHICAGO 37 · ILLINOIS

Dear Student: April, 1961

National Opinion Research Center, a non-profit research organization affiliated with the University of Chicago, has been asked by three Federal agencies, the U.S. Office of Education, The National Science Foundation, and the National Institutes of Health, to survey the career plans of seniors in American colleges and universities.

You are one of 40,000 students in 135 schools who have been chosen by scientific probability sampling methods to participate in this study.

The research is designed to yield important information on the relationships between college experiences and career plans.

The questionnaire requires 30 minutes or so to fill out. Please answer the questions as frankly and accurately as you can. Your answers will be absolutely confidential, and no individual student's answers will be revealed in the reports, which will be based on statistical tabulations.

Almost all of the questions can be answered by drawing a circle around one or more numbers or letters in the right hand margins of the questionnaire. Thus:

I am now-- (Circle one.)

A student in high school 1
A student in college . . . . . . [✓ 2]
A student in graduate or professional school X

NOTE: After each question there are instructions in parentheses. Please follow these instructions closely as they are very important for data processing.

A. If it says "(Circle one.)," draw a circle around only the one number or letter which best describes your answer, even though one or more other alternatives might be relevant.

B. If it says "(Circle one in each column.)" or "(Circle one in each row.)," please look to see that you have circled one and only one number or letter in each of the appropriate rows or columns.

C. If it says "(Circle as many as apply.)," circle as many or as few numbers or letters in the columns or rows as you think are relevant.

If you are interested in the results of this study, please write a letter or card requesting a copy of the results to National Opinion Research Center, 5720 South Woodlawn, Chicago 37, Illinois, after October, 1961.

Thank you very much for your help.

Sincerely,

James A. Davis

James A. Davis
Study Director

Survey 431

I. Plans For This Coming Fall

1. What will you be doing this Fall?

Circle the number which describes what you will be doing this Fall. If you expect to be doing two things simultaneously, circle both. If you are considering two alternative plans, circle only the more probable.

Working full time at a type of job which I expect to be my long run career field	2	(9) 1
Non-career military service	3	
Working full time at a civilian job which will probably not be my long run career field	4	
Housewife	5	
Graduate study in an arts and science field (physical science, biological science, social science, humanities)	6	
Graduate study in a professional field (law, medicine, engineering, education, agriculture, social work, etc.)	7	
Other (Circle and specify:______________________________)	8	

---

2. How definite are the plans you circled in question 1? (Circle one.)

Quite definite	X	(10) y
Fairly definite, but subject to change. . . .	0	
Quite indefinite	1	

---

3. If you are considering a set of alternative plans, different from the ones you circled in question 1, indicate them by circling the appropriate numbers below, using the categories from question 1.

If you have no alternative plans in mind, circle the number nine below.

2 3 4 5 6 7 8 9 (11) 1

---

4. At the time you entered college, what were your plans for study beyond the bachelor's degree? (Circle one.)

I planned to go into a line of work which requires graduate or professional training	X	(12) y
I planned to go on for graduate or professional training, but I didn't have a specific field in mind	0	
I planned to stop at the bachelor's degree	1	
I didn't have any definite plans	2	

---

5. Have you applied for admission to any graduate or professional school for the coming year? (Circle one.)

*No, and I do not expect to go to school next year	4	(13) 9
**No, but I do expect to go to school next year	5	
***Yes, I applied to one school	6	IF 4,
***Yes, I applied to 2 or 3 schools	7	SKIP TO
***Yes, I applied to 4 or more schools	8	COL. 23

---

*IF "NO, AND DO NOT EXPECT TO GO TO SCHOOL NEXT YEAR": SKIP TO QUESTION 7.

**IF "NO, BUT I DO EXPECT TO GO TO SCHOOL NEXT YEAR": SKIP TO QUESTION 6.

***IF "YES": PLEASE ANSWER a, b, AND c.

a. How many schools accepted you? (Circle one.)

None	0	(14) 4
One	1	
More than one	2	

b. How many schools rejected your application? (Circle one.)

None 5 (15)
One 6 9
More than one 7

c. Have you any applications pending? (Circle one.)

Yes 0 (16)
No 1 7

6. Did you apply (or were you nominated) for financial support (scholarship, fellowship, assistantship, etc.) for this Fall? (Circle one.)

*No 7 (17)
**Yes 8 9

*IF "NO": Did you not apply because-- (Circle any which apply.)

I had no intention of going to school at the time applications were due . 0 (18)
I wouldn't need any support of this type 1 7
The amount I could get would have been too little 2
The duties attached would have been unsatisfactory 3
I didn't think I could get any 4
It didn't occur to me to apply 5
Other (Circle and specify:________________________________) . . . 6

**IF "YES": PLEASE ANSWER a, b, c, AND d.

a. To where did you apply or was your nomination sent? (Circle one or more.)

The school I will (probably) attend 0 (19)
Other schools or schools 1 7
Other source (government, private foundation, etc.) . 2

b. Which ones offered you aid? (Circle one or more.)

The school I will (probably) attend 4 (20)
Other school or schools 5 9
Other source (government, private foundation, etc.) . 6
No offers 7

c. Which of the following do you expect to receive next year? (Circle one or more.)

Scholarship for part tuition 1 (21)
Scholarship for full tuition 2 9
Fellowship for tuition plus an amount under $1,000. . 3
Fellowship for tuition plus $1,000 or more 4
Teaching assistantship 5
Research assistantship 6
No financial support of this type 7
Don't know yet 8

d. From which of the following source or sources do you expect to receive financial aid (scholarship, fellowship, assistantship, etc.)? (Circle one or more.)

No financial aid of this type expected. 1 (22)
School I will attend 2 0
Private foundation, philanthropic organization, etc.. 3
U.S. Federal government:
    National Defense Act 4
    National Science Foundation 5
    Public Health Service - National Institutes of Health 6
    Other 7
State or local government (U.S.) 8
Other (Circle and specify:________________________). 9

ARE YOU SURE OR FAIRLY SURE THAT YOU WILL BE ATTENDING GRADUATE OR PROFESSIONAL SCHOOL NEXT YEAR? (ACADEMIC YEAR 1961-1962)?

IF YES: PUT A CHECK IN THIS BOX AND SKIP TO QUESTION 13 . . . . ☐

IF YES, SKIP TO COLUMN 32

IF NO: ANSWER QUESTIONS 7 THROUGH 11.

---

7. If there were no obstacles in terms of finances, grade records, getting admitted, etc., would you like to go on for graduate or professional study in the future? (Circle one.)

Yes	2	(23) 5
Maybe	3	
No	4	

8. Do you expect to go on for graduate or professional school sometime in the future? (Circle one.)

No	5	(24) 9
Probably not	6	
*Probably yes	7	
*Yes	8	

*IF "PROBABLY YES" OR "YES": PLEASE ANSWER a AND b.

a. Do you expect that your future employer will send you or pay for your future studies? (Do not count savings from your pay or anticipated veteran's benefits.) (Circle one.)

Yes	0	(25) y
No	1	

b. When will you start your graduate or professional studies? Make your single best prediction. (Circle one.)

Academic Year		
'62 - '63	0	(26) y
'63 - '64	1	
'64 - '65	2	
'65 - '66 or after	3	
No specific date in mind . . .	4	

9. Do you have a definite job (including military service) lined up after graduation? (Circle one.)

Yes	6	(27) 9
No, but I intend to be working	7	
No, I do not intend to be working . . .	8	

10. Since you've been in college, have you at any time considered going on for graduate study or considered an occupation which would require professional training beyond a bachelor's degree? (Circle one.)

I never thought of it	2	(28) 1
I thought about it, but I never considered it seriously	3	
I considered it seriously, but decided against it	4	
I do plan to go on, but not next year	5	

11. To what extent did immediate financial obstacles (not doubts about the long run economic value of further study) affect your decision regarding graduate or professional school next year? (Circle one.)

Financial obstacles had nothing to do with it	6	(29) 9
*Financial obstacles played some part in my decision .	7	
*Financial obstacles are the major reason I am not going on for further study next year	8	

* Please answer question at top of next page.

*Listed below are some selected types of financial assistance. Circle *any* type which in itself (not in combination with the others) would have made it possible for you to go on to graduate or professional school next year.

Tuition Scholarship 0 (30) 9
Fellowship for tuition plus $1,000 cash 1
Loan for tuition which would not have to be paid back until I was out of school 2
Loan for tuition plus living expenses which would not have to be paid back until I was out of school. 3
10-20 hour a week job as a teaching or research assistant 4
Financial help from my parents 5
Payment of all my current debts for undergraduate education 6
None of these 7

---

12. Which of the following best explains why you do not anticipate going to graduate or professional school next year? (Circle any which apply.)

No desire to do so . . . . y (31) 8Y
Can get a desirable job without further schooling 0
Financial obstacles 1
Low grades in college 2
Family responsibilities 3
I would rather get married 4
I want to get practical experience first 5
I don't think I have the ability 6
I lack the necessary undergraduate course prerequisites . . . 7
I'm tired of being a student 8
Military service 9
I will be in a company training program which provides the equivalent X

SKIP TO QUESTION 18, "FIELDS AND CAREERS" — SKIP TO COLUMN 38

IF YOU ARE SURE OR FAIRLY SURE THAT YOU WILL BE ATTENDING GRADUATE OR PROFESSIONAL SCHOOL NEXT YEAR, ANSWER QUESTIONS 13-17.

13. Have you decided upon the specific school you will attend? (Circle one.)

Yes 7 (32) 9
No 8

---

14. Write below the name of the school that you will most probably attend next Fall.

____________________ (Name of School) ____________________ (City) ____________________ (State or Country)

a. Is the above school the one you are now attending? (Circle one.)

Yes 4 (33) 6
No 5

---

15. If you were absolutely free to choose (ignoring finances, admissions, etc.) would you prefer to-- (Circle one.)

Go to the same school I expect to attend next year . . . . . . 0 (34) y
*Attend a different school. 1

*IF "ATTEND A DIFFERENT SCHOOL": Did any of the following prevent you from attending the school you would really prefer? (Circle any which apply.)

Wasn't offered any financial support (scholarship, fellowship, assistantship) 2 (35)
9
Was offered support, but it was too little 3
Was refused admission or didn't apply because I thought I would be refused 4
Financial obstacles other than scholarship, assistantship, etc. 5
Limited to schools in a particular community 6
Other (Circle and specify:______________________________) . . . 7

16. If you were absolutely free to choose (ignoring finances, admissions, etc.) would you prefer to-- (Circle one.)

Study in the same field I will be in 0 (36)
y
*Study in a different field 1

*IF "STUDY IN A DIFFERENT FIELD": Did any of the following prevent you from studying in the field which you really prefer? (Circle any which apply.)

Wasn't offered any financial support (scholarship, fellowship, assistantship) 2 (37)
9
Was offered support, but it was too little 3
Was refused admission or didn't apply because I thought I would be refused 4
Financial obstacles other than scholarship, assistantship, etc. 5
Limited to schools in a particular community 6
Other (Circle and specify:______________________________). . . 7

17. In terms of your finances during the next academic year when you are in graduate or professional school, from which of the following sources do you expect to receive $200 or more? (Circle any which apply.)

Full time job 1 (38)
9
Part time job other that teaching or research assistantship . . . 2
Withdrawals from savings 3
National Defense Education Act Loan 4
Other Loan 5
Parents or relatives 6
Income from spouse's employment 7
Other (Circle and specify:______________________________) . . 8

IMPORTANT

The following list of fields is to be used in answering Questions 18 through 24. Read the instructions for these questions found on page 8 before using the list.

Business and Administration

92 Accounting
90 Advertising, Public Relations
9X Military Service, Military Science
97 Secretarial Science (or employed as a secretary)
72 Industrial or Personnel Psychology
91 All other business and commercial fields (Business Administration, Marketing, Insurance, Finance, Industrial Relations, etc.)
93 Public Administration (or employed as government administrator if not covered by other fields)

Engineering

10 Aeronautical
11 Civil (including Agricultural, Architectural, Civil, Sanitary)
12 Chemical (including Ceramic)
13 Electrical
14 Engineering Science, Engineering Physics, Engineering Mechanics
15 Industrial
16 Mechanical (including Naval Architecture and Marine, Welding, Textile)
17 Metallurgical
18 Mining (including Mining, Geological, Geophysical, Petroleum)
1X Engineering, General and other specialties

Physical Science (NOTE: Secondary School Science Teaching is classified under Education)
01 Astronomy, Astrophysics
02 Chemistry (excluding Biochemistry which is 32)
03 Physics (excluding Biophysics which is 34)
04 Geography
05 Geology, Geophysics
06 Oceanography
07 Metallurgy
08 Meteorology (Atmospheric sciences)
0X Physical Science, General and other specialties

09 **Mathematics and Statistics** (NOTE: Secondary School Mathematics Teaching is classified under Education)

Education (NOTE: Junior College, College and University Teaching should be coded by Field of Specialization, not as Education)
50 **Elementary** (including Kindergarten and Nursery School)
Secondary--Academic Subject Fields
- 51 English
- 52 Modern Foreign Languages
- 53 Latin, Greek
- 54 History, Social Studies
- 55 Natural Science (General, Physics, Chemistry, Biology, etc.)
- 56 Mathematics

Specialized Teaching Fields
- 57 Physical Education, Health, Recreation
- 58 Music Education
- 59 Art Education
- 60 Education of Exceptional Children (Including Speech Correction)
- 61 Agricultural Education
- 62 Home Economics Education
- 63 Business Education
- 64 Trade and Industrial Education (Vocational)
- 65 Industrial Arts Education (Non-Vocational)

66 Counseling and Guidance
67 Educational Psychology
68 Administration and Supervision
6X Education, General and other specialties

Health Professions
20 Dentistry or Pre-Dentistry
21 Medicine or Pre-Medicine
22 Nursing
23 Optometry
24 Pharmacy
25 Physical Therapy
26 Occupational Therapy
27 Veterinary Medicine or Pre-Veterinary
28 Medical Technology or Dental Hygiene
2X Other Health Fields

Biological Sciences
30 Anatomy
31 Biology
32 Biochemistry
33 Botany and Related Plant Sciences (Plant Pathology, Plant Physiology, etc.)
34 Biophysics
35 Entomology
36 Genetics
37 Microbiology (including Bacteriology, Mycology, Parasitology, Virology, etc.)
38 Pathology
39 Pharmacology
40 Physiology
41 Zoology
3X Other Biological Science Fields

Agricultural and Related Fields
45 Agricultural Sciences (including Animal Husbandry, Agronomy, Farm Management, Horticulture, Soil Science, Soil Conservation, etc.)
46 Forestry, Fish and Wild Life Management
27 Veterinary Medicine
47 Farming (Code as occupation only, not as field of study)

Psychology (NOTE: Code Psychiatry as Medicine 21)
70 Clinical Psychology
66 Counseling and Guidance
67 Educational Psychology
71 Social Psychology
72 Industrial and Personnel Psychology
73 Experimental and General Psychology
74 Other Psychological Fields

Social Sciences
75 Anthropology, Archeology
76 Economics
04 Geography
83 History
77 Area and Regional Studies
78 Political Science, Government, International Relations
93 Public Administration
79 Sociology
96 Social Work, Group Work
7X Social Science, General and Other

Humanities
80 Fine and Applied Arts (Art, Music, Speech, Drama, etc.)
81 English, Creative Writing
82 Classical Languages and Literatures
83 History
84 Modern Foreign Languages and Literatures
85 Philosophy
8X Humanities, General and Other Fields

Other Fields and Occupations
86 Architecture, City Planning
94 Foreign Service (Code as occupation only, not field of study)
98 Home Economics (Code either as a field of study or as an occupation if you mean working as a home economist for pay)
99 Housewife (Code as occupation only, not as field of study)
87 Journalism, Radio-Television, Communications
95 Law, Pre-Law
88 Library Science, Archival Science
96 Social Work, Group Work
89 Theology, Religion (Employment as a Clergyman or religious worker)

X0 **Field of Study or Job Which has no Near Equivalent in This List** (If you use this code, please describe your field in a word or two under the questions where it applies.)

X1 **Do not expect to be either employed full time or to be a Housewife** (Code only for questions about careers, not for field of study.)

II. Fields and Careers

On pages 6 and 7 of this questionnaire is a list of fields of study and employment. Each one can be used to describe a field of study or a type of job. Thus, for example, in questions about fields of study, "Psychology" means college courses in psychology; in questions about careers, "Psychology" means the occupation of psychologist.

IMPORTANT NOTE:

When you have chosen the field or occupation from the list which is your answer to one of the questions below, please write the two numbers or letters of that field in the double box at the end of that question. For example, if "Clinical Psychology" is now your major field, write its code number (70) in the boxes at the end of question 18 thus:

7	0

18. Present major field?

If you have a joint major, give the one with the most course credits. (39-40) X X

19. Previous major field?

If you have not shifted majors, write "yy" in the boxes.

If you have several previous majors, give the first one in which officially registered. (41-42) X X

20. Future graduate or professional major?

If you do not plan to ever go to graduate or professional school, write "yy" in the boxes.

If you plan study in several fields, give the main one. (43-44) X X

21. Anticipated career field?

Please give what you expect to be your long-run career and ignore any school, stop-gap job, or temporary military service which might precede it.

If you are a woman, use "Housewife (99)" only if you do not expect to work full time until your children are grown. (45-46) X X

In addition to writing the code in the boxes, please describe your anticipated career in a few words here: ____________________

____

22. Possible alternative career field?

If none, write "yy" in the boxes.

If your alternative has the same code number as the one to question 21, write "yy" in the boxes.

If more than one alternative, give the most likely only. (47-48) X X

23. Career preference when you started college?

Give your single strongest preference even if it was vague or if there were several alternatives.

If absolutely no preference, write "yy" in the boxes. (49-50) X X

24. Any alternative career field seriously considered during college which is not mentioned in questions 21, 22, or 23?

If none, write "yy" in the boxes. (51-52) X X

NOTE: THE NEXT THREE QUESTIONS REFER TO YOUR ANSWER TO QUESTION 21 (ANTICIPATED CAREER FIELD). IF YOU CODED "99" OR "X1" AS YOUR ANSWER TO QUESTION 21, PLEASE SKIP TO QUESTION 28. OTHERWISE, ANSWER ALL THREE QUESTIONS.

25. **Which of the following will be your most likely employer when you begin full time work in your anticipated career field? (If you have a definite expectation, circle one; if not, circle the most likely possibilities.)**

Private company with 100 or more employees . . . . y **(53)**
SP
Private company with fewer than 100 employees or professional partnership . X
Family business 0
Self-employed 1
Research organization or institute 2
College or University or Junior College 3
Elementary or Secondary School or School System 4
Other educational institutions (e.g. Technical Vocational School). . 5
Federal Government (U.S.) 6
State or Local Government 7
Hospital, Church, Clinic, Welfare Organization, etc. 8
Other (Circle and specify:____________________). . . 9

---

26. **How do you feel about the occupation which you checked as your anticipated career field? (Circle one.)**

I strongly prefer it to any other . . . . 0 **(54)**
y
I could be tempted by one or more alternatives 1
I would prefer one or more alternatives 2

---

27. **The following activities cut across a number of specific jobs. Which ones do you anticipate will be an important part of your long run career work? (Circle any which apply.)**

Teaching . . . . 3 **(55)**
9
Research 4
Administration 5
Service to patients or clients. 6
None of these 7

---

28. **Regardless of your career plans now, when you first enrolled as a freshman in college did you have-- (Circle one.)**

One particular kind of work in mind . . . . 5 **(56)**
9
Two or more alternative kinds of work in mind. 6
No specific career plans at that time 7
Planned to be a housewife 8

---

29. **Which of these characteristics would be very important to you in picking a job or career? (Circle as many as apply.)**

Making a lot of money . . . . y **(57)**
SP
Opportunities to be original and creative x
Opportunities to be helpful to others or useful to society 0
Avoiding a high pressure job which takes too much out of you . . . 1
Living and working in the world of ideas 2
Freedom from supervision in my work 3
Opportunities for moderate but steady progress rather than the chance of extreme success or failure 4
A chance to exercise leadership 5
Remaining in the city or area in which I grew up 6
Getting away from the city or area in which I grew up 7
Opportunity to work with people rather than things 8
None of these 9

30. Listed below are six groups of occupations. The occupations within each group are similar to each other in many ways.

In Column A, circle the two types you would like best.

In Column B, circle the two types you would like least.

Consider the jobs as a group, not particular ones, and rate them only in terms of whether you would like that type of work regardless of whether such jobs are realistic career possibilities. Disregard considerations of salary, social standing, future advancement, etc.

Occupations	A. Two Best Liked Groups	B. Two Least Liked Groups		
Construction inspector, electrician, engineer, radio operator, tool designer, weather observer	X	X		
Physicist, anthropologist, astronomer, biologist, botanist, chemist	0	0	(58) y	(59) y
Social worker, clinical psychologist, employment interviewer, high school teacher, physical education teacher, public relations man	1	1		
Bank teller, financial analyst, IBM equipment operator, office manager, statistician, tax expert	2	2		
Business executive, buyer, hotel manager, radio program director, real estate salesman, sales engineer	3	3		
Actor, commercial artist, musician, newspaper reporter, stage director, writer	4	4		

---

31. Please circle all the statements which describe your feelings about these specific occupations. (Circle as many or as few as apply in each column.)

	(60) SP Research Physicist or Chemist	(61) SP College Professor	(62) SP High School Teacher	(63) SP Physician	(64) SP Engineer	(65) SP Business Executive
This sort of work would be very interesting	y	y	y	y	y	y
I don't have the ability to do this kind of work	X	X	X	X	X	X
I probably couldn't make as much money at this type of work as I'd like to make . .	0	0	0	0	0	0
One would have to devote too much time and energy to this work. I want to be able to spend more time with my family and friends	1	1	1	1	1	1
One would have to invest more time and money in preparing for this occupation than I feel I could afford	2	2	2	2	2	2
I know as a personal friend, or family friend, one or more people in this field. .	3	3	3	3	3	3
My parents would disapprove of my going into this field . .	4	4	4	4	4	4
My personality isn't suitable for work in this field . . .	5	5	5	5	5	5
People with my religious, racial, or family background don't have much chance of success in this field . . .	6	6	6	6	6	6
Wouldn't be challenging enough for me	7	7	7	7	7	7
I wouldn't like the life I'd have to lead outside the job	8	8	8	8	8	8
This is my father's occupation	9	9	9	9	9	9

32. Please rate the following in terms of their effect on your career plans or decisions during college. (Circle one in each row.)

	Very Important	Fairly Important	Un-important	Never Received Any	
a. Vocational or similar psychological tests	5	6	7	8	(66) 9
b. Discussions with my academic advisor . .	0	1	2	3	(67) 4
c. Discussions with faculty members other than my advisor	5	6	7	8	(68) 9
d. Advice from parents	0	1	2	3	(69) 4
e. Interviews with a professional psychological or vocational counselor	5	6	7	8	(70) 9

33. a. What is your opinion about the recently established Peace Corps? (Circle one.)

An excellent program about which I am enthusiastic . . . 2 (71)
9
A good idea of which I am very much in favor 3
A good idea but I am not enthusiastic 4
Probably a good idea but I am not enthusiastic 5
Probably not a good idea but I am not sure 6
Definitely not a good idea 7
Don't know enough about it to have an opinion 8

b. What are you personally likely to do about the Peace Corps? (Circle one.)

Definitely not volunteer 0 (72)
y
Am thinking about volunteering but have not made up my mind yet 1
Have thought about volunteering but probably would not. . 2
Am probably going to volunteer 3
Have already volunteered 4
I am not sure what I will do 5

c. Have you filled out the Peace Corps Questionnaire? (Circle one.)

Yes 6 (73)
9
No, but I intend to do so 7
Definitely No 8

d. Here are some reasons young people have given for their personal reactions to the Peace Corps. Designate reasons both for volunteering and for not volunteering if both kinds seem pertinent to you. (Circle any which apply in your own case.)

(1) Reasons for volunteering:

To make a personal contribution to world peace 3 (74)
9
The attraction of working closely with others 4
The opportunity to learn about foreign cultures and languages . . . 5
It would give me a chance to decide what kind of career I really want 6
To help the poorer nations of the world improve their economic conditions 7
It would further my career 8

(2) Reasons for not volunteering:

Family and personal obligations 1 (75)
9
Not eligible on physical grounds 2
Opposed to the general idea of a Peace Corps 3
It would interrupt my career 4
Too long a period of service 5
Low pay, undesirable working conditions, etc. 6
I don't have skills which would be useful to the Peace Corps 7
My personality isn't suitable for that type of service 8

BEGIN DECK II

III. College Experience

34. Did you do all of your college work at this school? (Circle one.)

Yes	X	(9) y
No, transferred after freshman year	0	
No, transferred after sophomore year	1	
No, transferred after junior year	2	
No, started here, attended a year or more elsewhere, and then returned	3	

35. Were you regularly employed during this academic year? (Circle any which apply.)

No	4	(10) 9
Yes--		
Full time job which is relevant to my anticipated career field	5	
Full time job which has nothing to do with my anticipated career field	6	
Part time job which is relevant to my anticipated career field	7	
Part time job which has nothing to do with my anticipated career field	8	

36. In which of the following have you been an active participant at this school? (Circle any which apply.)

Editorial staff of campus publication	0	(11) y
Musical or dramatic group	1	
Business staff of campus publication or other campus group	2	
Campus group concerned with national or world issues	3	
Inter-collegiate (varsity) athletics	4	
Fraternity, Sorority (or equivalent)	5	
Special interest group (e.g., Psychology Club, Outing Club)	6	
Student government	7	
Other (Circle and specify: ____________)	8	
None	9	

37. Please call to mind the students of your own sex who are your closest friends here. Where did you meet them? (Circle any which apply)

Knew them before I came here	X	(12) y
Dormitory or rooming house	0	
My Fraternity or Sorority (or equivalent)	1	
Campus activities	2	
Classes in my major field	3	
Classes in other fields	4	
Other (Circle and specify: ____________)	5	
No close friends here	6	

38. Of your close friends here, how many are going on next year for graduate or professional studies? (Circle one.)

All or almost all	X	(13) y
More than half	0	
Less than half	1	
Few or none	2	
No close friends here	3	

39. Which of the following best describes where you lived this year? (Circle any which apply.)

Fraternity, Sorority (or equivalent)	5	(14) 9
Dormitory or other campus housing	6	
Off-Campus room, apartment, house	7	
With my parents	8	

40. Listed below are some college courses which you might have taken. Please circle the number of any statements which describe your reactions. (Circle any which apply in each row. If none apply, leave the row blank.)

	(15)	(16)	(17)	(18)	(19)
	9	9	9	9	9
	Course or Area				
	Physics, Chemistry	Mathematics	Biology, Zoology, Botany	Social Sciences	English
I took one or more courses in this field or area during college . . .	X	X	X	X	X
I didn't take any courses in this field or area during college	0	0	0	0	0
I found this course content very interesting	1	1	1	1	1
I found this course content very dull . .	2	2	2	2	2
I have a flair for course work in this area	3	3	3	3	3
I found this area rough going academically	4	4	4	4	4
Teachers in this area encouraged me to go on in the field	5	5	5	5	5
I admire many of the teachers in this area as persons not just as professors.	6	6	6	6	6
By and large, the teachers in this area are not the kind of person I'd like to be	7	7	7	7	7
One or more of my close friends is majoring in this	8	8	8	8	8

---

41. Listed below are some purposes or results of college. Circle the one which is most important to you personally, and also circle the one which you think is most important to the typical student here. (Circle one in each column.)

	Most Important to me Personally	Most Important to the Typical Student here	
A basic general education and appreciation of ideas	0	5	(20)(21) 4 9
Having a good time while getting a degree	1	6	
Career training	2	7	
Developing the ability to get along with different kinds of people	3	8	

---

42. Have you had any experience in original research (participating in collecting and analyzing raw data or conducting an experiment, not writing papers based on published sources or doing experiments from a laboratory manual) during your college studies? (Circle any which apply.)

No, I have never participated in original research 2 (22) 9

Yes, I have--

a. Participated in research as part of a course 3

b. Been employed by a faculty member as a research assistant 4

c. Had an off-campus job (summer or during school year) working in research 5

d. Participated in a summer research training program sponsored by the government or private foundation 6

e. Conducted a research project on my own (e.g. senior thesis). . . . 7

f. Other (Circle and specify:________________________________) . 8

43. **What is your current academic status? (Circle one.)**

Registered Spring term and studying for a bachelor's degree to be awarded at Spring commencement (May, June, July, but before Summer session commencement) . . . . 0 **(23)** **3**

Registered Spring term and studying for a bachelor's degree to be awarded at Summer session commencement 1

Other (Circle and briefly specify your academic status:____). 2

44. **When you graduate, how much personal indebtedness will you have for your education? (Count only money you owe for tuition or living costs during school, not payments on car, appliances, clothes, etc.) (Circle one.)**

None . . . . 5 **(24)** **9**

Some, but less than $500 . . . 6

$500 - $999 7

$1,000 or more 8

45. **What is your overall (cumulative) grade point average for undergraduate work at your present college?**

IMPORTANT: If your school uses letter grades (A,B,C, etc.) please circle the code number which is closest to your letter grade average.
Warning: The number which you circle probably does not correspond to the number equivalent at your school, e.g. at most schools "straight A" equals 4.0, here it equals "0".

If your school does not use letter grades, there should be special instructions accompanying your questionnaire. If, through clerical error, the instructions are missing, write your average in the margin.

(Circle one.)

Letter Grade	**Code Number**	
A	0	**(25)** **y**
A-	1	
B+	2	
B	3	
B-	4	
C+	5	
C	6	
C-	7	
D+	8	
D or lower	9	

46. **Listed below are a number of awards and honors. Which of these have you received during college or which are you fairly sure you will receive by the time you graduate? (Circle any which apply.)**

Dean's List . . . . y **(26)** **SP**

Phi Beta Kappa x

Other honor society based on academic achievement 0

Graduation with honors (cum) (Magna) (Summa) 1

National Merit Scholarship holder, Finalist, or Semi-Finalist 2

Other scholarship awarded on basis of academic ability 3

Participation in "honors program" at this school 4

Prize or award for scholarship or research work (e.g. "Smith prize for best biology experiment") 5

Prize or award for literary, musical or artistic work 6

Took one or more graduate level courses as an undergraduate 7

Other award or honor 8

No special honors 9

47. As best you know, how do you stand among the other people graduating in the same major field at your school? (Circle one.)

Top ten per cent	4	(27) 9
Top quarter, but not top ten per cent.	5	
Second quarter	6	
Third quarter	7	
Lowest quarter	8	

---

48. What is your emotional feeling about your college or university? (Circle one.)

I have a very strong attachment to it	X	(28) y
I like it, but my feelings are not strong	0	
Mixed feelings	1	
I don't like it much, but my feelings are not strong	2	
I thoroughly dislike it	3	

IV. Personal Characteristics

49. Your age at your last birthday? (Circle one.)

19 or younger	0	(29) y
20	1	
21	2	
22	3	
23-24	4	
25-29	5	
30 or older	6	

50. Sex. (Circle one.)

Male	7	(30) 9
Female	8	

51. Marital Status. (Circle one.)

Single, don't expect to be married before Fall, 1961	4	(31) 9
*Single, expect to be married before Fall, 1961	5	
*Married, one or more children or expecting a child	6	
*Married, no children	7	
Widowed, Divorced, Separated	8	

***IF "MARRIED" OR "EXPECTING TO BE MARRIED BEFORE FALL, 1961":** What will your spouse or future spouse most likely be doing next year? (Circle any which apply.)

Working full time	3	(32) 9
Working part time	4	
Housewife, Mother	5	
Going to School	6	
Military Service	7	

52. Religion:

a. In which you were reared. (Circle one.)

Protestant (Circle and Specify)________________ X (33) y
Roman Catholic 0
Jewish 1
Other (Circle and specify:__________________). 2
None 3

b. Your present preference. (Circle one.)

Protestant (Circle and specify:________________). 5 (34) 4
Roman Catholic 6
Jewish 7
Other (Circle and specify:__________________). 8
None 9

53. Your racial background. (Circle one.)

White . . . . X (35) y
Negro 0
Oriental 1
Other (Circle and specify:__________________). 2

54. How many--

a. Older brothers or sisters do you have? (Circle one.)

None 0 (36) 4
One 1
Two 2
Three or more 3

b. Younger brothers or sisters do you have? (Circle one.)

None 5 (37) 9
One 6
Two 7
Three or more 8

55. Are you a U.S. citizen? (Circle one.)

Yes, U.S. born . . . . X (38) y
Yes, Naturalized 0
No, but I expect to stay in the U.S. 1
No, and I do not expect to stay in the U.S. 2

56. Please indicate your parents' (or step-parent's if parent is dead) highest educational attainment. (Circle one in each column.)

	Father	Mother
	(39) 9	(40) 9
8th grade or less	3	3
Part High School	4	4
High School graduate	5	5
Part College	6	6
College graduate	7	7
Graduate or professional degree beyond the bachelor's	8	8

57. a. Which of the following categories best describes the usual occupation of the head of the household in your parental family? (Circle one.)

Professional	1	(41)
Proprietor or Manager	2	y
Sales (Other than Sales Manager or Administrator)	3	
Clerical	4	
Skilled worker	5	
Semi-Skilled worker	6	
Service worker	7	
Unskilled worker	8	
Farmer or farm worker	9	

b. If the head of the household is a woman, also circle here	0
c. If the head of the household is retired, also circle here	X

---

58. Which of the following is the appropriate income category for your parental family? Consider annual income from all sources before taxes. (Circle one.)

Less than $5,000 per year	2	(42)
$5,000 - $7,499	3	9
$7,500 - $9,999	4	
$10,000 - $14,999	5	
$15,000 - $19,999	6	
$20,000 and over	7	
I have no idea	8	

---

59. Which of the following best describes the community which you think of as your home town during high school days? (Circle one.)

Farm or open country	X	(43)
Suburb in a metropolitan area of--		y
more than 2 million population	0	
500,000 to 2 million	1	
100,000 to 499,999	2	
less than 100,000	3	
Central city in a metropolitan area or city of--		
more than 2 million population	4	
500,000 to 2 million	5	
100,000 to 499,999	6	
50,000 to 99,999	7	
10,000 to 49,999	8	
less than 10,000	9	

---

60. Which of the following best describes the distance between your home town (when you were in high school) and your current college? (Circle one.)

In the same city or within commuting distance	X	(44)
Within four hours automobile drive or less	0	y
More than four hours drive, but in the same state	1	
More than four hours drive, but in a different state	2	

61. **Please rate yourself on the following dimensions as you really think you are. (Circle one in each row.)**

	Very	**Fairly**	**Neither**	**Fairly**	**Very**		
a. Unfavorable toward modern art	**y**	**X**	**0**	**1**	**2**	**Favorable toward modern art**	**(45)** **3**
b. Politically liberal	**4**	**5**	**6**	**7**	**8**	**Politically conservative**	**(46)** **9**
c. Conventional in opinions and values	**y**	**X**	**0**	**1**	**2**	**Unconventional in opinions and values**	**(47)** **3**
d. Religious	**4**	**5**	**6**	**7**	**8**	**Non-religious**	**(48)** **9**

62. **Listed below are some adejectives, some of which are "favorable," some of which are "unfavorable," some of which are neither.**

Please circle the ones which best describe you. Consider only those which are most characteristic of you as a person. (Most people choose five or six, but you may choose more or fewer if you want to.)

(49) **SP**	**(50)** **SP**	**(51)** **SP**
Ambitious X	**Good Looking . . . . X**	**Moody . . . . . . X**
Athletic 0	**Happy 0**	**Obliging 0**
Calm 1	**Hard Driving 1**	**Outgoing 1**
Cautious 2	**High Strung 2**	**Poised 2**
Cooperative . . . 3	**Idealistic 3**	**Quiet 3**
Cultured 4	**Impetuous 4**	**Rebellious . . . 4**
Dominant 5	**Intellectual 5**	**Reserved 5**
Easy Going . . . 6	**Lazy 6**	**Shy 6**
Energetic 7	**Low Brow 7**	**Sophisticated . . 7**
Forceful 8	**Methodical 8**	**Talkative 8**
Fun Loving . . . 9	**Middle Brow 9**	**Witty 9**

63. Your replies to this questionnaire are completely confidential, and absolutely no information of any kind about specific persons will be released to your school or anyone else. Your sealed questionnaire will be read only by the research staff in Chicago. However, in order to assess the statistical representativeness of the students in the sample, and because we hope to follow up some of the students in the sample next year to determine the outcome of their plans, we must ask you the following:

PLEASE PRINT

A. Your Name

Last Name	First Name	Middle Name

B. Your most likely address one year from now

Name of residence hall, department, company, etc., if any
Street Address

City or Town	Zone	State or Country

C. Name and address of someone who will know where you are or could forward a letter to you if you were not at the address you listed above

Last Name	First Name	Middle Name

Street Address

City or Town	Zone	State or Country

D. Name and address of the high school or preparatory school from which you entered college

Name of high school or preparatory school

City or Town	Zone	State or Country

IMPORTANT

You have now completed the questionnaire. Please seal it (to maintain confidentiality) and return it to the field representative at your school, according to the instructions he has provided.

WARNING: After you have sealed your questionnaire, your name will be inside. Make sure that you write your name and your return address on the outside back page, so that the field representative will know that you have returned your questionnaire.

TO SEAL: There is a gummed flap at the top of this page. Fold the questionnaire in half, and seal the folded questionnaire.

Thank you very much.

FOLD ALONG THIS LINE

FROM

TO

FIRST CLASS MAIL

PASTE GUMMED FLAP HERE